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ABSTRACT

This document contains nine papers from a systematic, classroom-based study of multiple intelligences (MI) theory in different adult learning contexts during which adult educators from rural and urban areas throughout the United States conducted independent inquiries into the question of how MI theory can support instruction and assessment in adult basic education (ABE), adult secondary education, and English for speakers of other languages (ESOL). The following papers are included: "Will Awareness of Their Own Intelligence Profiles Help My Students Become More Independent Learners?" (Betsy Cornwell); "How Can Teacher and Student, Working Collaboratively, a. Identify the Student's Strongest Intelligences through MI-Based Assessment and Classroom Activities? [and] b. Use the Understanding of These Intelligences To Guide the Learning Process?" (Meg Costanzo); "1. What Impact Do ESOL Activities Informed by the MI Theory Have on Student Engagement and Learning Strategies? [and] 2. How Do Prior Cultural Learning and Experiences Shape Students' Reaction to and Participation in ESOL Activities Informed by the MI Theory?" (Terri D. Coustan); "What Kind of MI-Informed Instruction and Assessment Can Be Developed That Will Help Adult

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Learners Deal with Math Anxiety, So They May Reach Their Stated Goals?" (Bonnie Fortini); "Can MI-Informed Lessons Help the Progress and Attendance of LD (Learning Disabilities) and ADD (Attention Deficit Disorder) Students Preparing for a GED?" (Martha Jean); "How Will Adult Diploma Students' Awareness of Their Own Intelligences and Their Participation in Activities Informed by MI Theory Affect Their Career Decision-Making Process?" (Jean A. Mantzaris); "What Effect Does Metacognitive Awareness of Their Own Multiple Intelligences Have on the Perceptions of Effective ESOL Teaching and Learning by Students With Limited Native Language Literacy? What Happens When I Try To Integrate MI into an ESOL Class?" (Diane Paxton); "Will the Use of a Multiple Intelligences Framework Support the Goals and Practices of Popular Education in an ABE Classroom?" (Wendy Quinones); and "How Does Knowledge of Multiple Intelligence Theory Broaden a Multi-Sensory Approach to the Teaching of Writing? How Does the Application of Multiple Intelligence Theory Enhance a Multi-Sensory Approach to the Teaching of Reading?" (Lezlie Rocka). Concluding the document is a 72-item reference list. (MN)

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Multiple Intelligences in Practice

Teacher Research Reports From the Adult Multiple Intelligences Study

Editors
Silja Kallenbach & Julie Viens

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Introduction

BACKGROUND AND PURPOSE OF THE AMI STUDY

The introduction of multiple intelligences theory (MI theory) in 1983 generated considerable interest in the educational community. Multiple intelligences was a provocative new theory, claiming at least seven relatively independent intelligences, in marked contrast to the traditional view of a unitary, "general" intelligence (Gardner, 1993a). Because multiple intelligences theory was intended for an audience of psychologists, Gardner's introduction to MI theory, *Frames of Mind* (1993a), had little to say about classroom application. Yet, it has been enthusiastically received by many educators who are aware of the many different "smarts" their students bring to the classroom. They are drawn to MI theory because it supports pedagogy and approaches such as whole language and cooperative learning. As a formal theory based on empirical research, it validates what teachers already know and do when they use diverse classroom practices. For more information on MI theory, please refer to the "MI Basics" web pages on the AMI web site: http://pzweb.harvard.edu/ami/mibasics.htm.

The efforts to apply MI theory that have been documented by Gardner and others have been at the preK-12, primarily preK-8, level. Until late 1996, the adult literacy field had not engaged in a systematic application of MI theory. Adult literacy students, perhaps more than any others, suffer from the consequences of unidimensional views of intelligence, which translate into uniform instructional and assessment approaches that favor logical and linguistic skills. Traditional approaches may have failed to reach and teach many adults when they were children.

In light of the positive experiences with MI theory at the preK-12 level, together with the promise it holds for our field, the AMI Study was conceived. The AMI study is a collaboration between Harvard Project Zero and the New England Literacy Resource Center (NELRC)/World Education under the auspices of the National Center for the Study of Adult Learning and Literacy (NCSALL) at Harvard Graduate School of Education.

The AMI study addresses the question, "*How can Multiple Intelligences (MI) theory support instruction and assessment in Adult Basic Education (ABE), Adult Secondary Education (ASE) and English for Speakers of Other Languages (ESOL)?*" This study is the first systematic, classroom-based research of MI theory in different adult learning contexts.

DESIGN OF THE AMI STUDY

In December 1996, ten ESOL, ABE, GED or diploma preparation teachers from Connecticut, Maine, Massachusetts, Rhode Island, and Vermont embarked on an 18-month journey to understand what the theory of multiple intelligences might have to offer to teaching and learning in their settings. These teachers took on the challenge to help their students identify and use diverse pathways to learning English, basic skills, and content utilizing MI theory.

Selected from among 38 applicants to participate in the study, the AMI teachers came from rural, small town and urban settings. Their teaching contexts were reflective of the diversity of the adult literacy field. One teacher's classes were conducted in the students' homes in rural Maine. The other ESOL, ABE and GED classes took place in community-based and public school-based learning centers and a community college. The AMI study was incorporated into the regular schedule and practices of each participating program. The weekly hours of instruction varied from 90 minutes to twelve hours depending on the class.

The AMI teachers experienced and examined MI theory and its implications for teaching and learning through a teacher research approach, defined as "... systematic, intentional inquiry by teachers about their own school and classroom work" (Cochran-Smith and Lytle, 1993). The teacher research framework and practices created an open, supportive, and validating context for AMI teachers to pursue their projects. If MI theory was the "meat and potatoes" of the AMI Study, then teacher research was the fine china that held it together and brought us all together around the same table. Teacher research offered a structured yet relatively open-ended way for the AMI teachers to make sense of MI theory according to their own questions and teaching contexts, while still sharing with and supporting each other as a team with a common foundation and goal: understanding and applying MI theory well.

The AMI teachers conducted independent inquiries in their settings, framed by a research question of their choice that related to their practice and MI theory. Thus, MI theory set the parameters for the teacher research questions. In so doing, it provided a unifying theme for teacher research. Everyone was struggling with making sense of MI theory in her context and from the vantage point of her particular research questions. They also shared the same articles and books on MI as a common point of reference as is evident in the "Evolution of My Work and Thinking" sections of the teacher research reports. The fact that MI theory is based on empirical research linked the teacher research to academic research. The fact that MI theory is a theory of intelligence, and not of education, left room for interpretation and debate.

The AMI teachers used multiple ways to collect data, such as keeping a journal, surveying students, and/or conducting observations. They maintained regular contact with each other in order to share their work and give feedback to one another. Regular, structured reflection processes were included in phone and group meetings. Each teacher had a "buddy" for mutual support. The buddies got to know each other's research projects in greater detail and served as sounding boards for each other.

IMPACT OF TEACHER RESEARCH ON HOW TEACHERS VIEW THEIR STUDENTS

Their participation in teacher research methods and activities, in combination with MI theory, was eye-opening for the AMI teachers. They came away from the experience with a self-proclaimed sharper eye toward their teaching and a deeper understanding of their students and themselves.

The teacher research approach, combined with a focus on MI theory, caused a significant shift in how many of the AMI teachers viewed their students. On the one hand, MI pushed them to understand and honor their students' strengths and learning preferences and find ways to utilize them for meeting learning goals. On the other, teacher research required them to pause and analyze what they were seeing and how it did or didn't match their existing assumptions. By and large, the AMI teachers gained greater appreciation for their students' abilities after they gave students more choices in content, how they processed it, and how they demonstrated their learning. In the teachers' words,

> *I had read about teachers being peers and how this would be effective with teaching adults. I thought this would be hard to achieve. As a result of this project, I realize how much of a peer I am to students.*
>
> *I was surprised by how much I learned from my students. The only way I do math is with paper and pencil. I watched them do math without me with potato chips and a scale.*
>
> *I thought I did a lot of activities and turned the class over to students. But I realized that I really didn't, and when I saw where that could happen I was amazed. I look forward to doing that even more.*
>
> *I found value in asking my students what they want and need.*
>
> *For the first time, I gave students a choice in what books they should take to work on over the summer. Normally I would have given students the book I thought was appropriate for them.*
>
> *I was surprised by the incredible growth I saw in students and how they were able to articulate it to me. Hearing them say it emphasized it more than just my observing it.*

IMPACT OF TEACHER RESEARCH ON TEACHERS

The AMI teachers grew professionally and personally through the teacher research experience. Many felt rejuvenated as well as challenged by the experience:

> *I grew professionally and personally. I learned a lot about my strengths and weaknesses. ... I've become more self-aware and confident.*
>
> *I learned that I have some good hunches. At the beginning, it was difficult. I would explain what I had seen and no one would understand what I was talking about. It has taken me the two years to say what I know in ways that people understand. I've gained a lot of confidence.*
>
> *It clarified my strengths and weaknesses for me; what I struggle with and what I excel at.*
>
> *Having to look at areas that are not my strengths and having to use them was difficult-writing journals and reports. In looking at areas where I do not excel I had to feel what my students feel in the learning process.*
>
> *It nourishes your teaching. It keeps you from getting stale. Keeps you fresh when you're involved in a research project.*

AMI STUDY AS A WHOLE

The data from the teacher research projects informs the overall study across the AMI classrooms. Two related products explicate what we learned in the AMI Study: a research report, to be released in 2001, and the *MI Grows Up: Multiple Intelligences in Adult Education* Sourcebook.

The AMI sourcebook is our attempt at presenting multiple intelligences - theory, critical issues related to its application, and practical examples in a way that is appropriate and useful for our colleagues in the field. It is designed to facilitate what we have come to believe are the key aspects of applying MI theory: developing a good understanding of the theory, and initiating manageable MI applications for instruction and reflection. It is co-authored by the AMI Study co-directors and the teacher-researchers.

PURPOSE OF THIS PUBLICATION

In this publication, we present the AMI teachers' research stories. It complements the *MI Grows Up: Multiple Intelligences in Adult Education* Sourcebook, but it stands alone as a rich account of the research journeys of nine AMI teachers. While the Sourcebook offers information about MI theory and the cross-cutting themes from the AMI experience, this volume sheds light on the individual teachers' research efforts on which the Sourcebook is based. For more information on the Sourcebook, please refer to the AMI web site: http://pzweb.harvard.edu/ami.

Although they follow a common format, each research project is a story onto itself with its unique context and findings. The findings reflect the teachers' interpretation and understanding of their data. They capture what stood out and was salient to the teacher with regard to her question. In almost every report, the voices of students come through as primary evidence for the findings.

ESOL teachers will likely be drawn to the richly textured writings of **Diane Paxton** and **Terri Coustan**. GED and Adult Secondary level teachers will be rewarded with new insights by reading the reports of **Meg Costanzo** and **Martha Jean**. Martha also has much to offer related to MI and students with learning disabilities as does **Lezlie Rocka** with her exploration of MI in a pre-GED reading class where she sought to expand her multisensory teaching approach. Career counselors will find lots of food for thought in **Jean Mantzaris'** thoughtful investigation of the interface between MI and career counseling. Math teachers will appreciate **Bonnie Fortini**'s struggles to use MI to help her students overcome math anxiety. **Wendy Quinones** adds a fascinating research angle with her focus on MI and popular education. Finally, **Betsy Cornwell**'s hope that MI would help her students become more "independent" (self-regulating) learners takes her on a research journey that ends with a poignant examination of various forms of student resistance.

We hope that this volume inspires practitioners to do their own teacher research, and that it informs practitioners about teacher research and multiple intelligences.

Betsy Cornwell

ABSTRACT

Betsy Cornwell's research project is motivated by a desire to gain a better understanding of why some seemingly motivated and capable students appeared to be unable or unwilling to do the academic work necessary to reach their own goals. She sets out to assist her students in developing their intelligence profiles, expecting "the intelligence profiles to be a self-reflection tool that would help my students determine their most effective problem-solving techniques." She discovers that "what had appeared to be ineffective problem-solving techniques turned out to be a series of complex decisions and survival skills." Betsy finds herself compelled to examine her own assumptions and values related to teaching and learning. She comes to terms with the fact that, in many instances, they are different from those of her students. "Rather than forcing a student to choose between "my way," and "your way," I found that honoring my students' assumptions can be a starting point for expanding their understanding." This realization leads her to seek and create other tools besides intelligence profiles to help her students meet their basic needs for security and dignity while reaching their academic goals.

Relying on insights gained through student logs, her own journals and observations from her one-to-one or small group tutoring sessions, Betsy develops MI-based ways to encounter student resistance. The report profiles five students as well as specific learning activities informed by MI theory that proved to be turning points in these students' learning process. Betsy concludes, "When my students feel threatened by an academic task, I can now look at the task through the lens of different intelligences and find optional ways to approach it. Often, just a change in materials can provide the way out that allows everyone to maintain their dignity and security."

Betsy Cornwell

RESEARCH CONTEXT

I work for an Even Start family literacy project in rural Maine. Most of the time I wear the Coordinator's hat, working with collaborators, writing reports and grant renewals and maintaining the budget. Part of the time, however, I am an adult instructor, teaching adults in their homes. Depending on the student's needs, I do ABE, ESOL, GED or ASE instruction with parents while I help them nurture their children's education.

Living as we do in a rural area, student isolation is a reality we have to deal with. Isolation is a function of limited transportation and child care options, but it also goes beyond that. Whether it is because of lack of transportation, extended work hours, or just not enough trust to feel safe in a learning center, our students are grateful for the opportunity to receive instruction in their homes. By delivering instruction in students' homes, we can offer a way around the logistical barriers as well as the less tangible ones.

When I visit a home, in some respects the teacher/student relationship is reversed. I am the visitor and my student is the host. I am the one who is unsure of the prevailing rules and appropriate conduct. My students find themselves in the role of protector and teacher as they help me figure out where to sit, how to address family members, which pets to approach and even how to find the home in the first place. This role reversal often feels strange, but I think it is good for all of us.

Will awareness of their own intelligence profiles help my students become more independent learners

The biggest challenge is that I only have 90 minutes' contact with each student per week. This precious time is too often eaten by distractions from children, phone calls, and real-life issues that legitimately sidetrack our plans. While many distractions are serendipitous and productive, lack of continuity is a constant frustration for me.

Something about family literacy intensifies the teacher/student relationship. Although we only have 90 minutes a week, each student has my undivided attention for that time. I also get to know children and other family members. Working with entire families in their homes has given me a wider perspective on my students and the factors that influence their learning.

RESEARCH QUESTION

Will awareness of their own intelligence profiles help my students become more independent learners?

This question had its origin in an uneasy observation. I always try to design my teaching around my students' own goals. Even so, I was occasionally feeling a sense of active resistance from some of my students. Sometimes they would adamantly refuse tasks that were clearly within their abilities. Sometimes they would argue endlessly over trivial matters. More often, they would just watch passively while I desperately tried to engage them, making no effort to help me in any way. These students persisted in their resistance, even when it meant sacrificing goals about which they obviously cared. They also persisted with me, apparently hoping that I could somehow find a way for them to reach their goals despite their refusal to do the necessary work. Most of the time, my teaching was enjoyable and exciting, but these situations were frustrating and draining. As I began my research, I wanted a better understanding of why some seemingly motivated students seemed unable to reach their goals no matter how hard I tried to teach them. I especially wanted to know if Multiple Intelligences theory had anything helpful to offer them.

My research question and plan evolved as my understanding of my students' learning increased. When the project began, I assumed intelligence profiles to be a self-reflection tool that would help my students determine their own most effective problem-solving techniques techniques. I soon realized that there was nothing simple about this project. What had appeared to be ineffective problem-solving techniques turned out to be a series of complex decisions and survival skills. As my awareness of the deeper motivations behind my students' resistance grew, I realized that I would need other tools besides intelligence profiles to help them meet their basic needs for security and dignity while reaching their academic goals. While my question turned out to be more complex than I thought, the answers are also much richer and useful than I expected. Together, my students and I explored the meaning of "independent learning" and what it means to be "smart". They patiently explained to me that many of my expectations of them seemed unrealistic. I sharpened my powers of observation and increased my ability to interpret their verbal and non-verbal messages. In the end, my students and I found some ways to help them succeed in their academic pursuits despite their inability to conform to my original expectations.

My students have taught me a great deal about their hopes and needs. The journey has not been at all what I expected. I still have not found the perfect term to describe my observation. Sometimes "resistance" seems to fit. Herbert Kohl's "not-learning" has appeal as well. Whatever I choose to call it, I now have a much clearer idea about how to confront (or "not-confront") it.

EVOLUTION OF MY WORK AND THINKING

I have always wondered why some supposedly "smart people," myself included, can seem so "dumb" in certain contexts. I was labeled "highly intelligent" in school, partly because of my knack for remembering trivial bits of information. Even though I passed as a "smart person" in school, I know better than to rely on my memory when I go grocery shopping. I never put my bags in the trunk of my car because I know I'll forget that I've been grocery shopping if I can't see them in my back seat when I get home. Most of my Even Start students have at one time or another been labeled "school failures," but they shake their heads in amusement at my absent-mindedness. They may not have been shining stars in school, but they can certainly remember when they have groceries in the trunk. I, in turn, am awed by adult students who can cook well without recipes, build without blueprints, or guide a skunk out of a department store without causing a smelly disaster. They have been able to develop and refine all of these skills without the written instructions and reminders I rely on so heavily. I was attracted to the AMI project because MI seemed to explain some of our differences.

Reading *Frames of Mind* (Gardner, 1983) and *Seven Kinds of Smart* (Armstrong, 1993) gave me a framework for understanding these differences. The best thing that has come from my study of multiple intelligences is that it takes talk of intelligence away from the "smart/dumb" dichotomy. I have never allowed any of my students to refer to themselves as "dumb." Even Start students, however, are not interested in hollow attempts to bolster their self-esteem. MI theory has given me a sound psychological basis on which to anchor my insistence that my students are not 93dumb" and must not refer to themselves as such.

Howard Gardner describes intelligence as the ability to do tasks and create objects that are valued by others. His emphasis on "authentic tasks" in learning is derived from this definition of intelligence. I can relate to it. In my "other life" as a piano teacher, I would never dream of trying to teach anywhere but a piano bench. The expectation that someone might learn to create music by reading a book is ludicrous. It stands to reason that my Even Start students will be more successful in meeting their goals if the learning tasks I assign them involve the tasks and objects that are important in their daily lives as parents, employees and citizens. A student's home is an ideal environment for authentic tasks. We are surrounded by "authentic" materials and "authentic" events. Throughout my Even Start career I have tried to use my students' real-life dilemmas and experiences as a basis for lessons. While this was generally a successful approach for me, I sometimes found that this kind of task could also be perceived as an invasion of students' privacy. Some of my students eagerly bring their mail to use in reading lessons. Others do not wish to share their personal business. I can understand why students might be reluctant to share such things as their checkbooks with me even when keeping a check register is a skill in which they are intensely interested.

Reading *Making Connections: Teaching and the Human Brain* (Caine and Caine, 1994) and *Multiple Intelligences in the Mathematics Classroom* (Martin, 1996) gave me a new spin on the idea of authentic tasks. Caine and Caine speak of the importance of making learning playful and meaningful in a non-threatening environment. Martin provides a variety of whimsical projects that nevertheless use math skills in authentic ways. I think my potato chip lesson could be put into this "whimsically authentic" category. Determining the weights and dimensions of various brands of potato chips may not be of pressing importance to the quality of anyone's life, but the skills we used - applying known processes to unexpected tasks, measuring and estimating - were definitely applicable to "real life." Moreover, I think the silliness of the task fulfilled an important function for my students. Men and women who worked the hardest to protect themselves from some kinds of learning would drop their defenses when the task at hand involved frivolous materials.

I began this project with the assumption that the resistance I sometimes encountered was due to students' lack of understanding. I thought that if I could just find the missing piece of background information or the right way to present the material, my students would drop their resistance and begin to learn. "'A Belief in Self Far Greater than Anyone's Disbelief': Cultivating Resistance Among African American Female Adolescents," by Tracy Robinson and Janie Victoria Ward (1991) introduced me to the idea that some students might have their own, very valid, reasons to be wary of education. Even though Robinson and Ward were talking about urban African-American teenagers, I could see many points of resonance between their descriptions and the experiences of my white, undereducated, rural students. Like the young women Ward and Robinson described, my students felt alienated and threatened by our community's educational institutions. Among the teenage mothers I worked with, I heard many of the same arguments for having children early and dropping out of school that Ward and Robinson described.

As one of my early attempts to describe the resistance I'd encountered, I had written an essay called, "Does the World Make Sense? Is it Supposed To?" In the essay, I described a young woman who could repeat and use the formula for converting ounces to pounds but thwarted my every effort to get her to apply that formula to a word problem. In my world, numbers have consistent properties that relate to physical reality in predictable ways. I had the sense that this particular student thought I was being terribly naive to make such an assumption. It seemed to me that her resistance to word problems arose from an alternative conception of reality where numbers were neither predictable nor related to the physical reality she knew. While my other students don't baffle me with word problems in the same way, they frequently present me with similar puzzling challenges to my assumptions about learning and education.

In his book, *In Over Our Heads* , Robert Kegan (1994) describes the orders of consciousness that define adult experience. The chapter entitled, "Learning: The Teacher Wants Us to Be Self-Directing" was especially helpful to me. Kegan confirmed my impression that the differences between my students' views of reality and my own were, indeed, sometimes fundamentally different. Reading his book helped me better understand what I could reasonably expect from my students. His descriptions of effective strategies for helping students bridge the gap from one order of consciousness to another encouraged me to use my students' understanding as a starting point for learning.

"But I'm Not a Therapist" (1998) is a working paper by Jenny Horseman in which she discusses the impact of violence upon literacy. She describes behaviors and coping mechanisms of trauma victims. Like Robinson and Ward, she questions the characterization of misunderstood behaviors as "unhealthy". All of my students are survivors of trauma, although not all have been subjected to domestic violence. Many of the situations she described have parallels in my Even Start experience.

My most recent "Aha!" experience has come from reading *I Won't Learn From You* by Herbert Kohl (1994.) He writes about "not-learning," which happens when students choose to reject subject matter their teachers are trying to teach. Kohl writes about "oppressive education" as the culprit in not-learning. Some of his examples relate to life circumstances as well as formal education.

Each of these authors shed light on the behavior of my students. I began to realize that, in many cases, my students were making deliberate choices not to learn, despite their obvious desire to reach their goals. *Frames of Mind* provided an expanded framework for understanding my students' abilities. The other readings encouraged me to also observe my students' learning in light of relationships, past experience and deeply felt loyalties. I began more seriously to consider the environment necessary for learning. I became more aware of the profound ways in which education changes students, creating unanticipated costs and unlooked-for rewards for the persistent student. My research progressed from being a "how-to" kind of project where I could just plug in missing information, to seeing much more complexity and richness in my students' relationship to learning. As my understanding grew, I became more skilled at finding ways to help my students meet their goals without asking them to sacrifice more than they were ready to give.

METHODS

The Students

During the project, I worked with ten different adults singly or in groups. Of the ten, Beth, Ben, Diane, Sohkom and Boeun best exemplify the insights I gained from my research. Therefore, I focused on them in this report.

Sohkom and Boeun are sisters. Sohkom and her husband have recently purchased a home near their parents' home. Before that, Sohkom, Boeun, their husbands, children, younger siblings and parents all lived in one large house. Sohkom and Boeun represent the "in-the-middle generation": Cambodian immigrants who came as children to this country with their parents and are now raising families of their own. I have been working with them for several years. Our current goal is to pass the exam for naturalization as U.S. citizens. Sohkom and Boeun's husbands and mother are also my students.

Diane is married and the mother of four children. A survivor of severe childhood sexual and physical abuse, she dedicates herself to healing. Her family lives in a cramped, rickety trailer in the woods. At this writing, Diane is a brand-new high school graduate. Her struggles to complete her final work in world geography will be an important feature of this report.

Beth and Ben are a couple with four daughters and a baby son. Ben works as the animal control officer for several local towns and as a security guard at a local sawmill. Beth came to Even Start five years ago as a very new reader. We are currently working on her writing, multiplication and measurement. Ben worked with me to pass his GED exam three years ago. Whenever he has time between animal calls and trying to grab a few minutes of sleep, we work on the very basic math skills he somehow never mastered.

The Plan

Research Question: Will awareness of their own intelligence profiles help my students become more independent learners?

In order to answer this question, I had to assist my students to understand their own intelligences as well as create a working definition of an "independent learner". Because I wanted my students to take more responsibility for their learning, I planned to let them have as much input as possible into the form of the intelligence profiles and the independent learner definition.

Like my question, my research plan has undergone several incarnations. Data collection tools have included periodic taped interviews, written case studies, learning logs kept by students, a teacher journal, my notes and reflections on my readings, and a jointly derived definition of the "independent learner."

Data Collection

- Scenario Tapes
  I taped interviews with my students during the period when I was thinking of my project as concerning problem-solving. I described open-ended situations involving everyday problem-solving such as broken washing machines and school dances. I asked students how they would cope with these situations and recorded their responses on tape. We then discussed the skills, talents or intelligences the students brought to bear on the situation and speculated on applications to our academic work. Several students have done two interviews. When I changed my focus to student resistance to learning, the scenarios seemed less useful, so I stopped using them.

- Learning logs
  Each of my students has been asked to keep a learning log or journal. Because many of my students have only very basic writing skills, I wanted the logs to be simple to complete. I started with a lined page that had several questions to answer. The current log consists of two spaces, "This is what we did," and "This is what I think." I copied several different versions of the form, each with a different decorative border, to add visual interest.

- Case studies
  All home-based teachers in my Even Start program are required to keep anecdotal records of all visits. For the duration of the research project, I expanded these records into what I call case studies. There is one case study for each home (i.e., "Beth and Ben," "Diane," and "Naturalization Class at the Samrith Home.") Each case study includes a description of the lesson as well as my observations and reflections. I have collected detailed accounts of each visit with each student over the course of the AMI project. For most of the project I also kept a separate journal to record reflections on my reading and the project as a whole.

  These written case studies have proven to be very useful. I have tried to elicit my students' reflections on our sessions together, but the most revealing information by far has come from students' behavior as recorded in the case studies.

- The Profiles
  My original plan called for several steps in the creating of individual intelligence profiles:

  1. *Introduce students to MI.* I began in my typical linguistic way, by showing my students a list of Howard Gardner's seven original intelligences. I quickly discovered that the terminology was intimidating to insecure readers so I replaced the list with a pie chart using Thomas Armstrong's terms and simple graphics. I added my own description of "nature smart" because it was not available at the time.

  2. *Students create "I can...." lists.* I asked each of my students to complete the sentence, "I can...." as many times as they liked. I wanted them to list the activities in which they felt most confident. In order to stimulate their thinking, I asked how they spent their days, what kinds of things other people asked them to do, what made them feel happy.

3. *Create student intelligence profiles.* I asked each student to compare the items on the "I can...." list to the eight intelligences and to speculate on how those strengths might influence their learning. I had planned to ask each student to create a representation of his or her intelligences. This could be a list, drawing, song, essay, chart, or anything else that would show the student's perception of his or her intelligence profile. As it turned out, I never asked any of my students to do this step. Sohkom, Boeun, Dare and Chan cooperated with the preceding steps but showed no enthusiasm. When they asked me to focus lessons more directly on their preparation for the citizenship exam, I complied. Diane seemed to feel threatened by this part of the project, as if I were invading her privacy or asking her to take on an identity with which she didn't feel comfortable. I backed off. Beth created her own pie chart and drawing even before I had a chance to ask her to.

- Defining the independent learner

  Like the logs, the "independent learner" definition was an attempt to get student reactions with which to compare my own. I began by interviewing each of my students about their definition of "the independent learner." I wrote each response on a separate card. At subsequent visits, I let each student review all responses and asked them to sort them into piles for "agree," "disagree," and "don't know."

  My conclusions about independent learning are based on a combination of student responses to the definition process, my observations of their behavior during lessons, and the research I have done on the topic.

FINDINGS

Finding 1: Individual Intelligence Profiles

When I began my investigation into adult learning and multiple intelligences, I expected that the process described under "The Profiles" in the "Methods" section of this paper would play a large part in my project. I thought my students would be as fascinated as I was with their learning processes. I learned that words I considered to be "student-friendly" such as "music smart," or "people smart," still could have threatening connotations for some students. They were frequently reluctant to admit to their strengths. They were suspicious of my attempts to validate abilities outside the recognized academic realm of linguistic and mathematical. I think that the discussion of individual intelligences may have felt invasive for some students, Diane especially. When they were willing to discuss their strengths and skills, I discovered that making connections between particular skills and specific intelligences was not as easy as I thought. I think we could have achieved the same results more easily without the emphasis on my students' individual intelligence profiles.

As I compared the case studies I had written with my students' entries in learning logs and their interview responses, I came to four conclusions:

- While I expected that the creation of individual intelligence profiles would yield a wealth of information about my students' intelligences and preferred ways of learning, I found that the exercise had limited usefulness and relevance for my particular group of students.
- Careful observation and analysis of students' behavior and feedback provided extremely useful information about their intelligences as well as the ways in which they learned best.
- The discussion of the "independent learner" revealed to me that my students and I approach adult learning from fundamentally different perspectives. Rather than forcing a student to choose between "my way," and "your way," I found that honoring my students' assumptions can be a starting point for expanding their understanding.
- Activities based on multiple intelligences theory can provide an effective way for students who resist certain academic tasks to reach their goals. MI-based activities helped my students approach my independent learner ideal, even in cases where they didn't value the ideal themselves.

Diane

Diane did not seem very interested in designing a personal intelligence profile. I asked her to look through her learning logs and categorize some of her activities by intelligence. She came up with the following list:

Word Smart — Writing Skills
Picture Smart — Standing your ground (showing feelings.)
Body Smart — The way you handle things in your life. Teaching skills
People Smart — Social skills. Knowing people. Support group. Counseling sessions.
Self Smart — Survival Skills. Teaching skills (techques [techniques?] to survive.)

"Standing your ground," is a reference to an incident when Diane had been very angry with me. She was proud (and I was relieved!) that she had not struck me. She had originally categorized this entry as "Body Smart." When I asked why she wanted to call it that, she changed it to "picture smart," and refused to discuss it further. I wanted to know more about Diane's list but she did not want to answer questions.

Sohkom and Boeun

The best way I can describe Sohkom and Boeun's reaction to the intelligence profile project is that they were patient with me. When I asked them to create an "I can...I had to entice Boeun away from a book she was reading. Eventually the two women produced identical lists:

I can cook and eat.
I can work.
I can shop.
I can take good care of my children.

We followed this activity with a "cooking class," where I observed and took notes while they prepared fried rice in their kitchen. The intention was for them to produce a written recipe from my notes. I had also been hoping that I would be able to extrapolate the intelligences they were using as I observed them at work. Even after reading several articles and initiating discussions of "the cooking intelligence" on the AMI listerv, I am unable to tease out the specific intelligences I saw at work that day. Sohkom and Boeun didn't seem very interested in discovering which intelligences they were using. They already knew they could cook. The lesson, however, was a valuable experience which gave validation to Sohkom and Boeun's impressive skill while helping them to make a connection between writing (producing a recipe) and something they do well. Even if I had been able to say definitively what intelligences were in operation, I don't think that would have added any significant value to the lesson. I chose to abandon further work on intelligence profiles because the task did not appear to be especially meaningful for these students. I did not want to use our limited time together on an activity that was not engaging their interest.

Beth

Beth was the only student who seemed to enjoy creating an individual intelligence profile. She was inspired to draw a pie chart similar to the one I had shown her. On it, she delineated her own "intelligences": "picture smart," "music smart," "kids smart," "nature smart," "math smart," "people smart," and "self smart body smart." Outside the circle, she wrote relevant activities for each category. (E.g., for "kids smart," she wrote, "I like to know different kids. They are all different." Next, she asked for a 18" by 24" piece of paper on which she drew pictures illustrating some of these intelligences. After much thought, I chose not to correct her choices to separate "kids smart" from "people smart" or to combine "self smart" and "body smart." [sic.] She offered her own simple and eloquent response to multiple intelligences theory. If we were to use the theory to design learning experiences that would suit her individual needs, this response seemed like a logical starting place.

Finding 2: Student Behavior and Feedback

I found that comparing my case studies with students' learning logs and their responses to our lessons provided a rich source of information about their needs and expectations as learners. As I re-read the case studies, I was often struck by details that had seemed insignificant to me at the time I recorded them. When compared with my notes as recorded in the case studies, the sparse learning journal entries became an eloquent testament to the kinds of learning activities that were most helpful to my students. Students' written log entries sometimes appeared to contradict the enthusiasm or boredom they exhibited during lessons. Putting together the various data sources gave me a much more complete picture of what was happening in our lessons and helped to resolve many of the apparent contradictions. The variety of activities with which we experimented became a much more rewarding source of information than my attempts to help my students create individual intelligence profiles.

Beth

Beth's simple learning log entries revealed information about the kinds of learning activities that were most meaningful to her. In the section labeled, "This is what I think": she usually wrote "ok." Several lessons, however, elicited longer responses as listed below:

Date	**Lesson**	**Comment**
10/20/97	Apples by the pound (Part 1)	How it cost
10/30/97	Apples by the pound (Part 2)	Yes we did fine (find) how much cost. I got good buy on my apple.
11/6/97	Apples by the pound (Part 3) and potato chips	I don't understand math.
11/14/97	Subtracting with beans and plates	I like math. Can do on paper. Can't on plants (plates.)
1/14/98	How long is $1,000,000?	It was good.
2/11/98	Study of patterns in 12 x table math.	It was good because the pattern how
2/25/98	Writing announcements for Even Start events	That good for me because didn't have my read teacher on Friday.
3/4/98	Doubling a recipe	Good!

My observations confirm that the lessons listed above were probably the most significant for her. Beth is always cooperative, but on these occasions she was less passive, asked questions, commented on the process of the lesson and offered suggestions. Although she records, "I don't understand math," for the potato chip lesson on November 6, she was more than typically engaged in this lesson. She formulated most of the questions for our investigation and took an active role in carrying out Ben's suggestions for finding answers. Whether or not she is willing to claim understanding, I know from my record of her behavior that this is the type of lesson I want to repeat with her because I know that engagement is a prerequisite to learning.

Ben

Ben occasionally joined Beth and me in our sessions together but did not participate in the intelligence profile project. The November 14 lesson with beans and plates was a truly significant session for Ben because during that and subsequent lessons he was finally beginning to understand the concept of regrouping in subtraction. Early in December, however, he and Beth had a terrible fight. Beth decided she had enough of Ben's put-downs of their daughter's poor school performance so she "gave him a taste of his own medicine." She told him that using beans to subtract was something that really dumb people had to do. Maybe he was not any smarter than the child he was calling dumb. She struck her mark, maybe too well. That was the end of beans and plates. It was almost the end of my work with Ben.

We all agreed that my working with both partners together was no longer a good idea. Ben and I planned to begin meeting at the learning center while Beth (who does not drive) would continue seeing me at home. This plan did not work because Ben never showed up at the learning center. Beth eventually persuaded me to let Ben join us again at home. Recently, I was able to use the beans in a multiplication exercise with both of them. Whenever I mentioned subtraction, though, Ben seemed to have a need to go somewhere.

What I learned from these interactions was that Ben's identity as the "smart person" in his family was crucial not only to his relationship with his wife, but also to his ability to learn. Only when Beth and I worked together to protect his self-esteem could Ben successfully confront as intimidating a task as subtraction was for him.

During our final session of the school year, I tried again to give Ben some subtraction problems. Before attempting the problems, he pointed out the ones that would be hard for him. He said he still didn't know how to deal with problems that contained a "0" in the first number. (e.g. 207 - 153). I did one problem for him, explaining the procedure for what seemed to me to be the hundredth time. Ben gave a happy exclamation and proceeded to solve the problems I had written for him and then asked for more. Why could he suddenly do a task that had eluded him for eight months? I think the exercise with the beans helped him to glimpse the relationship between mathematics and concrete reality he feels comfortable with. I think Beth's and my patient nurturing helped him feel secure enough to risk failure by really looking at a set of subtraction problems and thinking about what they meant.

Diane

My observations of Diane gave me more direct information about her intelligence profile than I was able to glean from my other students. Right from the beginning, she showed a preference for interpersonal intelligence. She participated in both scenario interviews, choosing to enlist another's help or cooperate in sharing resources. When I first discussed multiple intelligence theory with her, she immediately chose "people smart" as her best strength. This surprised me a great deal at first. Diane had recently lost a job because of her inability to accept even the most gentle criticism without losing her temper. While she has been an enthusiastic participant at Even Start events, she frequently shows a lack of understanding of basic social skills.

As I read her learning logs and reviewed my case studies, I began to see a pattern emerging. In her learning logs, she frequently writes about other people or herself in relation to others. Sometimes she talks about what she wants her children to learn from her experience. Often she writes about the people who may read what she has written. On February 2, 1997, we edited a personal journal entry for News From Home, our Even Start newsletter. I was pleased that, for once, she was willing to go back over something she had written and make corrections. Her description of the task was, "Reread it, fixed spellings, rewrite it. Got it ready for newsletter. To maybe help them to survive the abuse through my writings & how I worked at surviving the abuse to become a better person that can teach survival skills." When she was working to complete a high school course in geography, she collected a large stack of newspaper articles about various famous personalities instead of doing the worksheets I had assigned. Despite my assessment of her interpersonal skills, I had to recognize that she was processing much information through an interpersonal "lens."

Diane did not say much to me about her having linguistic intelligence, but often I observed her using writing to sort out her feelings. She was the only student in this project who made full use of the learning logs, often filling the front of the page and moving onto the back.

Although Diane made few claims to intrapersonal intelligence she did keep an extensive personal journal assigned by her counselor. She often asked me to read the journal, and several times used journal entries as starting points for my writing assignments. In her writing and in conversation, she made frequent references to her experience as an abuse survivor. Reading her journal and recording her statements about her inner life revealed a depth of self-knowledge that didn't show up in intelligence profile discussions.

My observations of Diane's behavior during our sessions contrasted with her learning logs. They provide a rich source of information about how she uses the various intelligences to learn. Over time, these observations provided the key to the successful completion of the geography course that surprised and delighted both Diane and me.

Sohkom and Boeun

Sohkom and Boeun's learning logs were unrevealing. Boeun usually wrote, "good," about every lesson. Sohkom had slightly longer entries, such as, "It was good." I observed that they were both very clever about avoiding writing. When I assigned written homework, they usually turned in identical assignments and confessed to having asked a younger sibling for help. In conducting personal business, Sohkom and Boeun typically handle the telephone calls and personal meetings, while delegating filling out forms and writing letters to their husbands.

A review of the case studies showed that Boeun enjoyed reading, although her reading skills were still quite basic. She often read during lessons, even when I or someone else was trying to talk to her. Sohkom prefered to chat. Both women were very focused on the needs of their husbands, parents and children. Most of our lessons involved day-to-day literacy tasks, such as filling out forms, understanding written materials from school and planning encounters with banking and other professionals. Sohkom and Boeun and their family represented my first contact with Cambodian culture. I do not think I know enough to separate which of my observations are expressions of their intelligences and which relate to their culture or experience in a repressive political climate.

Finding 3: The Independent Learner

I chose the term, "independent learner," because I wanted a way to express what would happen when my students moved beyond resistance. By the time I arrived at the final version of my research question, I knew that I was looking at students' active resistance much more than a gap in knowledge. Because I was looking for solutions instead of problems, I did not want to identify particular students as "resistant." I believed that one of the sources of resistance was the perception that learning was something I was trying to impose on my students. I guessed that if my students felt more responsibility for their own success, the resistance I was seeing would evaporate. This led me to the term, "independent learner." The final version of the question became, "Will awareness of their own intelligence profiles help my students become more independent learners?"

Teacher's Conception

I started with a vision of the "independent learner" as a person who knew what she wanted to learn and had enough grit to insist on a program that fit her goals and individual needs. She was not afraid to learn to use new resources and to try again when she failed. She could relate to teachers and peers as partners and resources in her quest for education.

As can be seen from the student input below, it quickly became clear that my vision and my students' expectations were very different. While I had respect for my students' desire to depend on me for their education, I didn't believe their position was very practical. For one thing, I was well aware of my own limitations in determining their needs and finding ways for them to meet their goals. Kegan (p. 275, 1994) says, "Educators seeking 'self-direction' from their adult students are not merely asking them to take on new skills, modify their learning styles, or increase their self-confidence. They are asking many of them to change the whole way they understand themselves, their world, and the relation between the two." Following Kegan's advice, I sought a way to meet my students where they were and go from there.

Student Input

The quest for the "independent learner" placed several demands on me, including the need to refrain from imposing my personal conceptions of our common goals on my students. I needed a student-derived definition of the "independent learner", which I sought by interviewing each student about his or her response to the term. This is what they said:

- Someone who learns on his or her own.
- A smart learner will ask for help when she or he needs it.
- You don't forget the things you learn on your own.
- A person wants to do different things.
- I'm an independent learner. Everything I've ever learned, I've learned on my own.
- An independent learner gets better at doing what he or she does.
- Someone who goes different places (store, library) to find out what he or she wants to know.
- Someone who uses a dictionary.
- One person is learning.
- Someone who works alone. (Good if she knows what she's doing.)
- Someone who talks to people.
- It's the teacher's job to make sure the student is learning.
- It's the student's job to learn.
- Being an independent learner is a toss-up between good and bad.
- It's good to be independent in some things.
- An independent learner can show you the work he or she has done.
- Someone who is willing to work.
- If I were an independent learner, I wouldn't be in Even Start.
- People don't learn alone.
- Teacher and student need to work as a team.
- The student needs to work but the teacher needs to be sure the student doesn't have too much work.
- When a student doesn't understand, the teacher should give extra help.
- Sometimes it takes longer to learn on your own.

Every student told me they did not like the term, "independent learner." Many of them pointed out that learning works best as a cooperative venture. My term conjured for them an image of being left alone to teach themselves. I tried offering some alternatives to "independent learner." Although there was no consensus, the most popular alternative was "lifelong learner."

In this part of the project, I think Beth could be seen as a divergent case because her ideas matched mine most closely. She said an independent learner was a person who "goes different places" to learn things and "can show you the work he or she has done." My other students focused their responses largely on the responsibilities of the teacher. Their vision of a successful student was someone who could work well under a teacher's careful guidance. They repeatedly told me that "learning alone" was not a good thing.

My next step was to write these responses on separate cards and ask each student to sort the cards into three piles: "agree," "disagree," and "don't know." There was little agreement among students' opinions. The responses most often in the "agree" pile were:

- Teacher and student need to work as a team.
- When a student doesn't understand, the teacher should give extra help.

All other responses ended up in a least one person's "disagree" pile.

While sorting cards into piles, I had a very interesting conversation with Diane about the word, "smart." In the past, Diane had enjoyed Thomas Armstrong's terminology and adapted it to her own use. (Learning Log March 4, 1997 — "...and used my smarts from the center computer to this computer.") On this day, however, she had great contempt for "smart" people. When we came to the card that said, "A smart learner will ask for help when s/he needs it," Diane disagreed:

> ***Diane:*** *'Cause if they was a smart learner they would not be asking for help. You'd already know all the answers. If they were smart they would not need school, and they would not need teachers.*
> ***Betsy****: Do you really think there is such a person?*
> ***Diane:*** *No*

At this point, I pressed her to explain, but she merely repeated her two assertions that smart people know all the answers and that nobody can be that smart. She continued:

> ***Diane:*** *I can't be a smart learner because I don't know all the answers. I can't even say the — far away places (searching for the word, "geography.")...I'm really stupid. I ain't got the brain.*
> *(AMI videotape 11/14/97)*

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Two months later, at Diane's graduation ceremony, she presented me with the following letter:

> *To Betsy,*
>
> *Thanks for teaching & taking me all over the world from my own kitchen table once a week.*
>
> *I really have learned a lot from you in the last two years we've been together as teacher and student.*
>
> *I will miss the time we shared together when we was teaching and learning from each other.*
>
> *Once you asked me what a lifetime learner is to me and I really didn't have an answer for you then.*
>
> *My answer today to you is take a look at you and I together sitting at my table, learning from each other, teaching each other week after week to me this here today is a lifetime learner setting goals for yourself and dreams & seeing those goals and dreams come through as I did today at my graduation.*
>
> *I learned how to be a friend to a good teacher.*
>
> *So I say to you Betsy thanks for being a really good friend in my life.*
>
> *Diane*
>
> Your friend for life.

Finding 4: MI-Based Activities and Resistance

MI has offered me a whole new set of ways around student resistance to learning. When my students feel threatened by an academic task, I can now look at the task through the lens of different intelligences and find other ways to approach it. Often, just a change in materials, informed by my observations of the student's strengths and preferences, can provide the way out that allows the student to maintain her dignity and security.

The way it is usually taught, Diane's geography course utilizes atlases and encyclopedias and perhaps a globe. When we added magazine pictures, colored stickers, glue, wallpaper, newspaper clippings and a biography of Princess Diana, she found her own way to reach her goal. Beth and Ben's potato chip lesson provided us with a dramatic break from their usual competitiveness. I attribute that partly to the unexpectedness and "safety" of using junk food in a math lesson. I think another part of its effectiveness is the fact that they were shaking, measuring, nibbling, estimating and thinking without pencils in their hands.

Diane's experience with geography provides a graphic example of the role of MI-based activities in circumventing student resistance to learning. She presented me with a daunting challenge when she failed to complete the geography course in time for our learning center's high school graduation ceremony in June 1997. Following the pattern of resistance I had seen in other students, she seemed unable to complete a task that was well within her abilities and necessary to the achievement of a goal about which she cared a great deal. Diane and I persisted in trying to complete the course throughout the 1997/98 school year. As I talked with Diane about multiple intelligences and the "independent learner," read her learning logs and journal, and recorded my observations from our sessions together, a picture of Diane's learning processes began to emerge. My suggestion that she use maps to locate places where celebrities lived or traveled was based on my knowledge of her interpersonal intelligence. I believe that this activity helped Diane move beyond her resistance for two reasons: One, because the activity was a good match with one of her strong intelligences. Two, because it allowed her to function in a realm where she felt safe, she was able to use maps and conduct research without feeling that her identity as a "not-smart" person was being threatened. Knowledge of MI-based teaching allowed me to offer Diane several options for completing her geography unit. Diane chose the ones that were most effective for her and achieved her goal.

During those weeks May 1997 when Diane was finishing up her work for her diploma, she worked on a budgeting elective and a writing course, but never touched the geography assignments I had given her. At her request, I allowed her to read the AMI case study I had been writing about her. She was outraged to read that I thought she had not been doing geography homework. She showed me a large stack of newspaper clippings she had been collecting as proof of all the work she had done. At that point, I was at a loss to find a connection between the seemingly random collection of articles and the seven countries she had chosen to study for the course. The deadline for completion of her work went by and Diane was unable to attend the graduation ceremony she had planned on. Although we planned to meet during the summer, she never kept any of our appointments. Fortunately, she was ready to resume work by the following October. Diane's learning log entries illustrate what happened next:

From Diane's Learning Log:

> *October 2, 1997*
>
> *Made a plan for me to finish my work for my diploma. What I need to do so that I can graduate. I asked why I would ever need Geography for in my life. She won't answer me about Geography. She is up to spring something on me that I don't know about yet. I would do my best on getting all my work done on time. I will try my best to work around my husband work schedule to make it to the library or learning center for help on Geography. I will work very hard for Betsy even though she springs stuff on me at the last minute.*
>
> *October 9, 1997*
>
> *Today we worked on my geography papers of foreign countries. One of them was Germany. We tried to find them in the national geographic for pictures or articles on the places that I am studying about in them. We found a interesting article on the Berlin Wall and the way that Berlin was divided back then with this wall. In the article I found on Berlin Wall it told why the people from there thought it was a important thing to them that the wall be knoted down and for the country to change hopefully for the better today's world.*
>
> *Even though I don't know why I need to know about Geography in my life as a mother of four children. There are some parts of it that I find interesting to me but as far as ever going to visit these places, I don't think so not if I have to get on airplane to get there.*

Finally, on January 15, 1998, I once again confronted Diane about her failure to do geography homework. Again, she was genuinely surprised that I thought she had not been doing any work and showed me her growing collection of newspaper clippings. This time I noticed that the clippings were about people rather than countries. There was a folder for Princess Diana, one for JonBenet Ramsay, one for the Unabomber, etc. At this visit, Diane also revealed that she owned a current and complete set of encyclopedias. This was significant because she had continually refused to go to the library for research.

Finally, it occurred me that we might be able to connect Diane's interpersonal intelligence to geography. The next week I brought blank maps of the United States and the world and a package of colored stickers. We browsed through Diane's book about Princess Diana and the newspaper clippings. Diane chose a color for each person represented in her collection. She then located places those people had traveled and placed appropriate colored stickers on the maps. She had to use the notebook atlas I had provided her to find place names and then approximate those same locations on the blank maps. Suddenly, maps and atlases were no longer the foreign, impossible tools they had seemed before.

From Diane's learning log:

> *January 22, 1998*
>
> *Today I learned how to find places on the world map. I used color coded stickers on the different places that I learned about today....*
>
> *Started my own map with the color coded stickers. On places that current events happened that was of interesting to me....*
>
> *Learn to use a map can be fun and interesting to do.*
>
> *Being able to travel to different places without having to get on the plane myself. Because I can do it from my kitchen table in my home....*

Although I offered Diane the option of adding more stickers to maps during several subsequent visits, she always declined in favor of working on the worksheets she had hated so much the previous spring.

When Diane first showed an interest in magazines, I suggested that she create collages as an alternative to the worksheets. I asked her to look for magazine pictures to illustrate such things as the scenery, animals, food and people of her seven countries. She seemed enthusiastic about the idea, but the collages, like the worksheets, were neglected until after that lesson with the colored stickers and the world map. After that she insisted on completing collages and worksheets. She also took magazine articles that she considered to be especially significant and bound them into "books" with decorative covers and magazine picture illustrations.

Just a few weeks before graduation, I was confronted with a new dilemma. Diane's social worker and her husband both sought me out to warn me that Diane was becoming depressed about finishing her work on geography in time to graduate. She was feeling like she had more work left than she could handle. The problem looked more to me like she had already done too much work and was having trouble putting it together in a final form that was satisfactory to her. As we had the previous spring, we once again found ourselves disagreeing about how much work she had to do and how good it had to be. The difference this time was that I was telling her that she had done enough and she was telling me that she needed to do more. When I tried to tell her that she should stop tinkering with her Egypt collage because it was "good enough," she chided me, "but you're always telling me I can make it better!" As my last visit before graduation came to an end, she actually followed me to my car asking if I thought she should write one more essay or perhaps take another test. Over and over I had to repeat, "Diane, you are finished. You've done everything you needed to. You can stop now."

DISCUSSION

My first surprise in this project was that my students didn't enjoy talking about their own thinking and learning. Fellow teachers and my piano students seemed to enjoy my questions about their strengths and thinking processes. Even Start students, however, responded with bewilderment or avoidance. All too often, students would respond to questions about their strengths by saying, "I'm not good at anything." I repeatedly got the feeling that I was invading privacy and dignity by persisting in the discussions. I think this was partly because students weren't readily seeing the connection between my talk of intelligences and their academic goals. Another element was the negative experience many of my students have had with institutionalized education. Any talk that included words like, "smart," or "intelligent," carried with it the unspoken epithet, "dumb." I was treading on sensitive ground.

Besides the resistance to talking about their own intelligences, I encountered another challenge to creating personal intelligence profiles. When students were willing to identify their own strengths, their identified skills often lay in domains that didn't match the eight intelligences. For example, several of my students identified cooking as something they do well. As I observed these students at work in their kitchen, I certainly agreed that they were demonstrating great skill but I was at a loss to identify which intelligence they were using. I encountered this same difficulty with many other domains. Tasks such as cooking and car repair (especially without a repair manual) require a complex mix of intelligences which vary with each individual. Even when the intelligence seemed clear to me, (e.g., parenting as interpersonal intelligence,) my students didn't always agree. Since my goal was to help my students come to a point where they were taking more responsibility for their own learning, I decided not to worry about fitting our discoveries into existing categories. I was happy that students were identifying strengths. Using the students' own terminology, (i.e., "kids smart," "cooking intelligence," etc.) could actually make the job of connecting skills to learning easier.

While creating personal intelligence profiles and defining the "independent learner" seem to have been somewhat threatening for some of my students, many of the "authentic tasks" MI theory inspired me to try seemed to very effectively create a safe, playful learning environment. When I pulled potato chips out of my bag, Beth and Ben seemed to temporarily lose some of their competitiveness and insecurity as they worked together to answer their own questions. In another context, words like "calories, " "weight," and "nutritional value" might have seemed intimidating. Because Beth and Ben were investigating potato chips instead of "math," they felt secure enough to learn. (See "Lessons" section for a description) Sohkom and Boeun had a chance to show me their smooth competence and teamwork when I asked them to show me how to cook fried rice. I came into this project wanting to feel more like a partner in learning than a leader. I liked the way these activities naturally led into that kind of relationship. In Sohkom and Boeun's case, I think the chance to use a skill which they have refined to a high level of competence was a welcome contrast to the way they feel when confronted with printed English. I've had a chance to use potato chips in workshops with adult educators. Like Beth and Ben, the junk food seems to encourage them to relax their self-consciousness and experiment freely.

I think Diane's breakthrough with geography followed my original expectations a little more closely. She wasn't very interested in the intelligence profile, but I did learn that she enjoyed using interpersonal intelligence. Once I noticed that she was organizing her newspaper clippings around people, I was able to help her see maps as representations of places where people she's seen on television live and work. That seemed to have been the connection she was waiting for. From that point on, she stopped creating barriers (can't go to the library,) and started creating solutions (producing the encyclopedias.)

I think that Diane's graduation letter indicates that her conception of adult learning is beginning to parallel mine. She talks about "setting goals for yourself & seeing those goals and dreams come through." The day she did the last of her work on the geography course, our disagreements about how much work was needed and how to decide when a project was "done," indicate to me that she was taking over the responsibility for her own learning. She further surprised me by showing up at the learning center when I wasn't even there to ask for help with some paperwork necessary for financing her family's new home. Whatever the problems were that made geography homework and visits to the learning center so impossible in October 1997, Diane clearly found a way around them. Her obvious pride in her achievement makes it clear to me that she found a way to reach her goals without giving up any important aspects of her self-image or world view.

In his book, *In Over Our Heads*, Robert Kegan (1994) included a powerful quote from Soren Kierkegaard: "If real success is to attend the effort to bring a person to a definite position, one must first of all take pains to find him where he is and begin there. This is the secret of helping others...In order to help another effectively I must understand what he understands. If I do not know that, my greater understanding will be of no help to him. Instruction begins when you put yourself in his place so that you may understand what he understands and in the way he understands it."

Kierkegaard's quotation takes me back to my original puzzlement over students' failure to complete simple, necessary tasks that would lead them to their goals. I now have a much improved understanding of the active resistance I've observed in some of my students. When I say "active" resistance, I don't mean that any of my students necessarily have a desire to thwart my attempts to help them reach their goals. I think that sometimes the process of learning brings all of us up against the need to change parts of ourselves that we don't feel ready to tinker with. In the chapter entitled, "Healing: The Undiscussed Demands of Psychotherapy," Kegan talks about how difficult it can be for a person who is constructing reality according to the third order of consciousness to separate his sense of himself from his feelings or his relationships. I've seen reflections of this idea in Diane's and Ben's reactions to criticism. They are vulnerable because, to them, any challenge to their behavior or knowledge is an attack on their worth as a person.

Diane is struggling with her self-image. Her contempt for "smart people" was coming through loud and clear. I would imagine that those "smart people" she so despises feel comfortable in places like libraries and schools. They can probably use reference resources with ease. I wonder if visiting a library or using encyclopedias might have been activities that threatened Diane's self-image.

Ben's skill with wild and domestic animals is highly prized in our community. He has a scrap book full of newspaper articles about his exploits rescuing endangered pets and playing temporary host to abandoned baby deer and moose. Despite all that, math reduces him to a fragile child. His role as the "smart" person in his family is severely threatened when he confronts the skills he lacks.

When I come up against puzzling, counter-productive behavior in my students, such as Diane's refusal to visit the library or Ben's rejection of a learning strategy that obviously helps him understand an important concept, I can't always expect to know the reasons behind the behavior. As well as I know both of these people, I'm just speculating about their reasons for rejecting the learning they so obviously need. I don't think it is usually reasonable to expect my students to explain themselves, either. I see my job as one of trusting their ability to define their own lives even when I don't understan d. If I can offer options for learning, my students can choose the path that works best for them. Understanding the cause of resistance isn't as important to me as finding a way around it. If I assume that the student is protecting some part of his or her self image, I need to find a way to reach the goal without threatening something fragile. I don't think it's a coincidence that Diane became willing to use her encyclopedias just when I came up with the "Princess Diana" activity. Something about linking geography with famous people helped her feel secure enough to believe that she could proceed with the demands of the geography course. Ben is eager to learn better math skills and seems to learn better through hands-on MI-based activities, but he needs to be able to do that without threatening his relationship with his wife.

CONCLUSION

MI provided me with an exciting way to "understand what he understands in the way he understands it," as Kierkegaard put it. I can now see that the concepts I'm trying to teach will look very different to a person whose strong intelligences are different from my own. Further, MI provides a framework in which the hierarchy of abilities depends on the task at hand. For example, linguistic intelligence may be important when writing a story, but I'd rather be with a person who has strong naturalistic intelligence if I encounter a skunk in a department store. Working from this framework, it feels natural to approach my students as equals in learning.

I think that five years from now, I will be better able to discuss the ways in which my experience with the Adult Multiple Intelligences study has transformed my teaching. At this point, the one thing that stands out for me is the increased confidence I feel when approaching my students' varying goals and needs, whether stated or unstated. The recognition that my own strengths and expectations don't always match those of my students feels much more like an exciting challenge now than a frightening problem. My arsenal of "authentic" learning tasks is growing as are the options I can offer my students for connecting their strengths with their academic goals. Awareness of my own limitations is accompanied by growing trust and respect for my students' ability to set their own objectives and paths for learning. That's a very liberating experience for a teacher like me who always seems to have more questions than answers.

Meg Costanzo

ABSTRACT

Meg Costanzo's primary research concern is how to identify her students' strongest intelligences through an MI assessment in order to guide their learning process. She begins her AMI journey by reflecting on her own intelligences and is then inspired to "encourage students to go through the same type of reflective process." In her small, rural program where learners prepare to take the GED or work on a task-based diploma program, Meg develops an assessment students can use on their own. She then encourages her students to explore their intelligences in greater depth through weekly dialogue journals.

She discovers that "students appreciate having their intelligences acknowledged and valued. Many have never had the opportunity to claim their intelligences before this experience." Meg believes this deepened self-knowledge has served to increase her students' self-confidence which, in turn, increases the students' willingness to experiment with non-traditional learning strategies. However, she also emphasizes the importance of providing repeated exposure to MI-based learning activities and strategies. Meg documents how she has infused her teaching with MI-based approaches, especially project-based learning. Several quotes from her students substantiate her finding that "adult students are enthusiastic about real-life projects and are willing to take a role in how their learning programs are designed." Meg concludes that working from their strengths leads students to think more readily "outside of the box" and to become better and more confident problem-solvers.

Meg Costanzo

RESEARCH CONTEXT

I teach an evening Adult Basic Education (ABE) class at The Tutorial Center in Manchester Center, Vermont. To understand our learning center, you need to know something about our community. Located in southwestern Vermont in Bennington County (population 36,000), the Town of Manchester has a population of about 3,600. The area's two largest industries are tourism and retail trade, two sectors of the economy not traditionally known for creating high paying jobs. Manchester is also a popular retirement spot for out-of-staters. It is an area of contrast, with many very expensive estates and upscale neighborhoods, interspersed with pockets of poverty, especially in the outlying rural settings.

My students have ranged in age from 16 to 54. The overwhelming majority are white, female native Vermonters. Most are working in service-oriented occupations; some are staying home to raise families. When asked about their interests and hobbies, my students generally list outdoor activities, natural science, animals, crafts, and family. Adult students come to The Tutorial Center to prepare for the GED tests or to earn a high school degree in the Vermont Adult Diploma Program (VADP). Since we have an open enrollment policy, they can enter the program whenever they wish and remain until they have met their educational goals. This means some students are in the class for a few weeks, while others register for a year or more, depending on their academic abilities. GED students follow a prescribed course of study developed around the tests they need to pass. VADP students work on basic competencies, write autobiographical essays, and work independently on a set of skills assigned by the state. This means that on any given night, each student might be working on a different assignment. Some students may just be beginning the program, while others are in the final stages of completing their work. The program is one that demands a great deal of flexibility on the parts of both the students and the teacher.

How can teacher and student, working collaboratively, a. identify the student's strongest intelligences through MI-based assessment and classroom activities? b. use the understanding of these intelligences to guide the learning process

RESEARCH QUESTION

> *Intelligence is the ability to solve a problem or to make something... carry something through to completion... being able to do something which is valued in at least one culture or community... There are abilities which either are or are not valued. If they are valued, we call them intelligence; if they're not, then we just ignore them.*

Howard Gardner, Ph.D.
Address to the New England
Conference on Multiple
Intelligences in ABE and ESOL
Boston, MA – December 3, 1996

In my first teacher journal entry, written a month after hearing Gardner's address, I commented on how this definition had influenced me as I formulated my research question. From my twenty-three years of experience as an elementary school teacher of grades three to six, I knew the potential educational value of a project-based curriculum – increased participation and engagement in learning and opportunities for students to develop a wide range of skills while displaying their knowledge in a variety of ways. My initial research question reflected my desire to adapt those project-based classroom units and activities that I had found so successful with elementary school students to ones that would interest adult learners.

In *The Art of Classroom Inquiry*, Hubbard and Powers state "...many teachers have to do some wandering to get to their wonderings" (1993, p. 3). This was certainly the case in my research attempts. When I first applied to participate in the Adult Multiple Intelligences (AMI) Project, I was interested in researching how MI theory could inform the teaching of mathematics in adult learning contexts. While at the Institute in December of 1996, I changed the focus of my research to reflect my interest in project-based curriculum. My question then read, *"How can MI Theory guide the development of project-based learning activities that are designed to address the needs and interests of ABE students? b) What skills will be developed in the process and how can they be demonstrated in a résumé?"*

My teacher journal entries from the early months of 1997 chronicle my growing frustration as I attempted to implement my first research action plan. I expressed concern over student attendance, the resultant lack of continuity in lessons, and my inability to gather data relevant to my question. The program's open enrollment policy proved to be a major stumbling block in completing the long-term project work I assigned. Students simply did not stay in the program long enough. One group of students was often left to finish the work of others, and I found that the new students experienced difficulty motivating themselves to complete projects in which they had made no initial investment.

Hubbard and Powers also maintain that classroom inquiry often starts "...with a feeling of tension" (1993, p.3). My level of anxiety mounted steadily. By the end of March 1997, I realized that although I still believed in the advantages of organizing my class around a project-based curriculum, if I were to continue as a participant in the AMI Project, I would have to modify my question. I decided to return to my original area of interest – how MI theory could inform mathematics instruction. Feeling that this might be too limiting, I broadened the area of inquiry to address the learning process in general. This gave me more latitude should the composition of my class change.

In April of 1997, I rewrote my research question and action plan to reflect a shift from group activities to ones where individuals could proceed at their own rate, while still participating in group projects that were more short-term in nature: *How can teacher and student, working collaboratively, a. identify the student's strongest intelligences through MI-based assessment and classroom activities? b. use the understanding of these intelligences to guide the learning process?*

EVOLUTION OF MY WORK AND THINKING

> *I do not know whether the personal intelligences – or indeed any intelligences – have any absolute priority....But certainly I find the personal intelligences the most intriguing and challenging ones; they tell us the most about other cultures; and, of course, they tell us the most about ourselves.*
>
> **Howard Gardner**
> in *Succeeding With*
> *Multiple Intelligences*
> (Boggeman et al., 1996, p.viii)

In December 1996, I began my participation in the AMI Project by reading two books simultaneously, *Frames of Mind*, by Howard Gardner, and *Seven Kinds of Smart*, by Thomas Armstrong. These two markedly different pieces of literature served as a foundation for my understanding of MI theory. In reading *Frames of Mind* I developed an awareness of the scope of Gardner's research and was particularly impressed by the numerous criteria he used to isolate and identify each intelligence (1983). Armstrong's book provided a way for me to move from Gardner's realm of the theoretical to the practical. In *Seven Kinds of Smart* Armstrong encourages the readers to:

a. examine their own abilities as learners.
b. celebrate their strengths.
c. investigate their hidden intelligences.
d. be optimistic about overcoming their weaknesses (1993, p.23-24).

It was during this phase of my research that I spent a lot of time in self-reflection regarding my own MI profile. While the books and articles that I have read helped to give me a foundation for understanding the theory, my own understanding of MI came about through my experiences in applying the theory in practice and my attempts to understand my own intelligences, as well as the intelligences of others whom I know well. These latter efforts probably gave me the most insight into what Gardner was trying to prove in his writings.

I spent a lot of time thinking about my childhood and the things that stood out in my mind – the types of toys with which I enjoyed playing, the activities in which I took part, the school subjects in which I excelled, my relationships with others. I began to reflect on the significance of these memories. These, among many other recollections, gave me an inkling to my own intelligences profile.

Then I started to think about something that I enjoy doing as an adult, something in which others also recognize my expertise. On March 12th, I shared my reflections with Julie Viens, one of the AMI Research Project Co-Directors, by e-mail.

> *I also tried assessing my own intelligences in light of something I enjoy doing as an adult. I spend some of my leisure time doing counted cross stitch. I don't know how familiar you are with this craft, but, understandably, it is the kind of needlework that will drive some people out of their minds. Nonetheless, I enjoy it, but why?*

At the end of my musings, I concluded my thoughts with this observation:

> *Intrapersonal - This is my favorite area upon which to reflect. I call my work on these projects 'cheap therapy.' While I am stitching I can focus on those things about which I want to think and block out everything else. I make most of my big decisions this way. New ideas and approaches come to me as I am stitching. I feel cheated when I don't have time to work on my needlework. It's an important part of my day, much like personal journal writing might be to someone else.*

After mulling this over, I then decided to analyze how I learned to do something that required ability in an area that is not one of my strengths. I thought about how I learned to ski, a sport that certainly requires a person to draw upon his/her bodily/kinesthetic intelligence, not one of my strengths. My road to becoming a competent skier was a long one. It took me years to gain the confidence to be proficient enough to ski with my friends. Normally I would not have made the effort to achieve a skill level in sports, but in this case I did. I wondered why I had reacted differently in this situation.

After reflecting on why I like to do cross stitch and how I learned to ski, I realized that intrapersonal was indeed my strongest intelligence, and I had used that intelligence to learn about MI! By thinking about my own intelligences, my own strengths and weaknesses, I came to an understanding of what the theory was all about. Although the readings and institute were certainly helpful in clarifying aspects of the theory, it was only when I related it to my own life that I truly began to understand MI. At our March Institute, we received the results of the MIDAS questionnaire. I found it interesting that my MI profile from this assessment scale correlated so closely with the introspective piece I had just written. Once again my strongest intelligence came across as intrapersonal.

At this point in the project, I was inspired to develop an assessment tool which would encourage students to go through the same type of reflective process that I had just experienced. I tried using the "Personal Learning Preferences" form found in Bruce Campbell's *The MI Handbook* (1994, p. 31). Despite our class discussions about MI, I realized that some of my students did not possess the skills necessary to reflect upon their strongest and weakest intelligences. I thought about having the students respond to the checklist found in Armstrong's book (1993, p. 18-23), but felt the type of response it invited was too black or white. For instance, under the category "Linguistic Intelligence," the reader is asked to check whether or not this statement applies to them, "Books are very important to me." I felt a yes/no form of response to this type of statement would not really tell me much about the student as a whole or about linguistic intelligence. After examining C. Branton Shearer's MIDAS questionnaire (1994), I came up with my own AMI Assessment Survey. (See section on "Methods.") The process I went through in developing this tool further helped me to understand MI theory.

While I was working on this assessment tool, I was also reviewing several books that outlined MI-inspired lesson plans. They included *Multiple Intelligences in the Mathematics Classroom*, by Hope Martin; *The MI Handbook*, by Bruce Campbell; and *Seven Ways of Teaching*, by David Lazear. Although they were written basically for teachers at the elementary and middle school level, I felt that many of the plans could be adapted for use with adult students. When I was teaching students in grades three through six, I had used thematic units that involved projects and activities that I now realize had been in the spirit of MI theory. While I had wanted to do similar types of assignments with my adult students, I was reluctant to do so for fear that they would find this type of work too immature. At the March AMI Institute, several of my fellow researchers on this project shared some of the activities they were using with their students. Their success with these same types of assignments I had been considering gave me the encouragement I needed to take a risk and try some of the non-traditional plans I had long wanted to implement in the adult classroom.

In the fall of 1997, I became intrigued with the role the personal intelligences could play in the formation of an effective ABE program. After reading an article from *Educational Leadership* that discussed Daniel Goleman's book, *Emotional Intelligence*, I decided to read the book myself. I began to sense that one of the most important themes that was beginning to emerge from my research centered around the importance of the personal intelligences. When I had first begun studying MI theory, I had subconsciously dismissed interpersonal and intrapersonal intelligence into a subcategory that was less significant than the six other intelligences. Upon reading Goleman's book and rereading the chapter in *Frames of Mind* entitled "Personal Intelligences," I changed my attitude regarding these two intelligences. I was particularly interested in the section of the book that outlined Salovey's subsumation of Gardner's personal intelligences into his definition of emotional intelligence, which he then expanded into five domains:

> Managing emotions
> Knowing one's emotions
> Motivating oneself
> Recognizing emotions in others
> Handling relationships (Goleman, 1997, p. 43-44).

I then read *Succeeding with Multiple Intelligences: Teaching Through the Personal Intelligences*, a guide created by the faculty of The New City School. Besides giving me many interesting ideas for creative lesson planning, the introduction to the book helped to crystallize my beliefs about the personal intelligences. In the "Foreword," Howard Gardner wrote about the controversy surrounding his inclusion of the personal intelligences in MI theory; "When the theory of multiple intelligences was first introduced to the public, the idea of 'personal intelligences' proved especially controversial …many readers – especially psychologists – balked at the thought that an individual's relation to others, or to herself, could be construed in a cognitive way." Gardner goes on to say that there is "...a growing acceptance of the notion that we need to be intelligent about the world of humans, as well as the world of objects and symbols" (Boggeman et. al, 1996, p. vii).

Further into this same piece, Gardner relates some of his attitudes towards the personal intelligences, indicating the role they can assume as "…vital participants in good education." He also states that:

> "...the personal intelligences are more closely related to one another than any two other sets of intelligences....Indeed, I was often hard pressed to decide whether a particular exercise or goal constituted an instance of interpersonal intelligence, intrapersonal intelligence, or both. To a theorist, clarification of the relation between the intelligences remains important; for the practitioner, however, some attention to both is the primary mission" (p. vii-viii).

In addition to the literature cited above, I have listed other resources that had an impact on my research in the bibliography at the end of this paper.

METHODS

> *I would stress ... the importance of having a viable model of oneself and of being able to draw effectively upon that model in making decisions about one's life.*

Howard Gardner
Frames of Mind (p. xviii)

Participants

I worked with seventeen students over the fifteen months of this research project. Only one was with me the entire time. All the students were white and English speakers. Two students had completed 8th grade as their highest level of education; two had finished one year of high school; six had two years of high school and the same number had completed three years. One student had recently received his GED diploma. The following chart shows how the remaining demographics of the group broke down.

	# Male	# Female	Total #
Age			
16 to 24 years	3	7	10
25 to 34 years	1	3	4
35 to 44 years	1	1	2
45 to 54 years	0	1	1

By the end of the research project, six students had met their educational goals; four had shown progress toward meeting theirs by passing at least one test; two were still enrolled, but had not taken any tests; three had moved out of the area, while two others had left for unknown reasons.

Data Collection

I gathered my data from the students, from the classroom and from my teacher journal and classroom plans. The data collection tools that I used with my students included interviews, dialogue journals, surveys and examples of student work which were stored in their personal resource books.

The first tool I introduced to the students was the dialogue journal. At the end of each class, I would set aside ten to fifteen minutes when the students could record their comments about the class in notebooks expressly provided for this purpose. The students could write about anything they chose, but I tried to focus their writings by offering open-ended questions like, "How did you find tonight's math lesson?" or "What type of brainstorming activities work best for you?" I would collect the journals, which were completed voluntarily, and respond to the entries written by the students, offering comments, suggestions and questions for them to ponder.

In the first couple of weeks of attending class, a new student would take the AMI Assessment Survey and plot his/her responses on a profile grid. (See chapter on "Assessment.") Deciding that I needed a way to make the new members of the class familiar with what we were doing in the project, I developed the AMI Assessment Survey and recorded the script on audiocassete tape. In the beginning of the tape I offer the rationale for exploring a student's intelligences, explaining why this information will help the student prepare for the GED exams or earn an adult diploma. Then the student listens to eight selections, each describing someone who might display a given intelligence. The student responds by indicating whether each selection describes him/her "very much," "a lot," "somewhat," "a little" or "hardly at all." The student then plots his/her findings on an "AMI Profile" grid and files this graph in front of his/her dialogue journal.

Although this survey does not give a definitive assessment of the student, it does provide a starting point to begin investigating a student's strengths, and a common vocabulary to use when discussing how the student learns best. The survey also shows my students that I am willing to look at each one of them as an individual. I find that they appreciate my interest, and this, in turn, makes them more willing to try different approaches to learning.

Periodically, I would review student work, looking for student strengths, and share these informal assessments with the student either in class or through comments in the dialogue journal. Each quarter, using a set of semi-structured questions I had designed to elicit information on how the students view themselves as learners, I would interview the students and record the results of our discussions. Additionally, to record data from the classroom, I wrote up anecdotal notes after each session. After writing up these notes, I then prepared a more formal account of the lessons in my teacher journal.

As I began collecting my data, I soon realized that I needed a way to compile it in a more effective manner. I developed another collection instrument which I entitled the "Cumulative MI Assessment Worksheet." I took information that I had gathered on each student and organized it in chart form under the headings "AMI Tape," "Writing/Journal" and "Observations/Interviews/Incidental Conversations." Periodically I would update this worksheet with new data.

I was able to obtain copies of videotaped sessions from Silja Kallenbach, one of the directors of the AMI Project, who videotaped my class in November 1997 and March 1998. I found the data I could glean from them very helpful in assessing my students' involvement in MI-inspired activities. This unexpected resource added a unique perspective to my data collection base.

FINDINGS

> *My own studies have shown that people love to [construct their own intellectual profiles]. Kids like to do it, adults like to do it. And, as an activity it's perfectly harmless. I get concerned, though, when people think that determining your intellectual profile – or that of someone else – is an end in itself. You have to use the profile to understand the ways in which you seem to learn easily. And, from there, determine how to use those strengths to help you become more successful in other endeavors.*
>
> **Howard Gardner**
> *Educational Leadership*
> (Checkley, 1997 pp.10-11)

A. How can teacher and student, working collaboratively, identify the student's strongest intelligences through MI-based assessment and classroom activities?

Evidence of student intelligences can found by:

1. observing how they approach the challenge of solving a problem.
2. examining their writings.
3. discussing their strengths with them.
4. surveying their likes and dislikes.

A. Findings

- Students appreciate having their intelligences acknowledged and valued. Many have never had the opportunity to claim their intelligences.
- Through communication in dialogue journals, many students were able to explore their intelligences in greater depth.

Through the use of surveys, observations of classroom interactions, analyses of work in their resource books, student interviews and interactive journal writings, the students and I were able to develop fairly comprehensive profiles of their strongest intelligences. In the clear majority of cases, the students reported enjoying this experience and found it to be a worthwhile activity. I think it is important to emphasize that the students' profiles were never viewed as something static or definitive; we constantly reviewed our findings and expanded upon the initial profiles as we accumulated further data. How we used the information we gathered is explained in Part B of this section.

On the following pages the reader will find case studies describing four of the students with whom I worked during this research project. All student names have been changed. Their writings have been edited for spelling only.

Finding 1A: Students appreciate having their intelligences acknowledged and valued. Many have never had the opportunity to claim their intelligences.

Roland

Roland was a student in my class when I began working on the AMI Project. He had already taken and passed three sections of the GED exam, but he still needed to work on math and writing. Roland had decided that, since math was his stronger subject, he would first work exclusively in writing.

I introduced MI theory to Roland and another student by writing the word "Intelligence" on the board and asking them to tell me the first thing that came into their minds. Roland's response was to quickly say, "I.Q." From there the two students offered responses like "not just having an education," "common sense," "the ability to put things together," "artistic talent," and "not just reading and writing." During another class a couple of weeks later, I shared information about Gardner's theory with the students. My notes from my teacher journal for the night of 1/27/97 indicate how Roland reacted to this information.

> *During the discussion, while we were looking at the diagram, Roland made the comment that he didn't fit under any of the categories. It was nice to see both Donna and Libby turn to him and begin to point out areas in which he exhibited strength. This shows what a good rapport the group has – I was proud of them.*

At the same time as these discussions were taking place, I also had the class working on a team building exercise. I had posed this challenge to the group – "What can we do, as a class, to make The Tutorial Center a more comfortable environment in which to work and learn?" As a class, the students had decided to requisition a larger white board for the classroom because the one we had was not large enough for all the students to see what was being demonstrated, nor was it big enough for students to work together at the board. Observing how the students reacted to this challenge gave me insight into all their intelligences. In particular, I noted in my teacher journal for the evening of 1/13/97, "Roland immediately jumped up to the present board and began measuring the wall." I also indicated that he was the first to point out which boards from the catalogue would be too large for the wall space we had available.

When I began gathering data for this project, I had the class fill out Campbell's questionnaire titled "Your Current Learning Preferences" (1994, p. 31). I met with each student individually afterward to discuss his/her responses. The notes from my meeting with Roland in March 1997 offer some further information that helped us to determine his MI profile.

> *Roland checked visual as his strongest intelligence. He told me that he can look at something, like an entertainment center, and just know right away how to put it together.*
>
> *When I asked him if he was surprised by anything new he had realized about himself after answering the questions, he replied that he was now aware of how well he worked with others. I mentioned that he certainly likes to be physically active – fishing, hunting, skiing, hiking, riding. He agreed and said that one of the hardest things he found being in school was sitting still for long periods of time.*
>
> *When I asked him if he had any questions or comments about the AMI Project, Roland told me that he was glad I had shared the ideas about MI theory with the class. He felt that this information could be helpful because it showed what "we would be good at." Roland told me that he never knew or had never thought of this definition of intelligence before.*

Later that spring, I developed the AMI Assessment Survey and asked the students to respond to it. Roland was one of the first to take the survey.

Name: Roland

Adult Multiple Intelligences Profile

	Musical	Bodily/ Kinesthetic	Linguistic	Logical/ Mathematical	Visual/ Spatial	Interpersonal	Intrapersonal	Naturalist
Very Much								
A Lot		X			X	X		
Somewhat	X			X			X	
Just a Little								
Hardly at All			X					N/R

From his responses, it is apparent that Roland was very much aware of his strengths – bodily/ kinesthetic, visual/spatial and interpersonal. Although I had not yet added a scenario for the naturalist intelligence at this point, I feel confident in saying that he also would have listed this as one of his strongest intelligences.

Our initial theory regarding Roland's strongest intelligences was further verified when I examined two of his writing pieces for information about his intelligences. In March, Roland wrote an essay about what his ideal day would be like. He wrote about going fishing (and catching more fish than his brother). A few months later, Roland wrote another piece about something he does well. Although he listed fishing, hunting, skiing, socializing, and photography during his initial brainstorming session for this assignment, he chose to write about woodworking. My anecdotal notes from the evening of 6/25/97 provide a rich source of information about Roland's intelligences.

> *Complained about having to write 150-200 words – others teased him, 'Just be quiet and start writing!' Used self-interviewing technique effectively...Ended up with a web filled with ideas. Wrote the first draft of his essay before leaving class. Mentions learning by watching dad at work. States, 'I love going into churches to admire the art of woodworking.' Likes the 'ruggedness' of a post and beam structure. Thinks he has a 'creative mind and a taste for some unusual looking furniture.'*
>
> *Mentioned that if he won the lottery, he would quit his job and spend his time helping senior citizens with home repair work, free of charge.*

Roland's acceptance of his strongest intelligence and his willingness to apply it to the writing process developed over the course of the semester. In January, he could not find himself in the descriptions of any of the intelligences. By May, he was claiming his intelligence without my prompting, but still not drawing upon it voluntarily when faced with the challenge of a writing assignment. My teacher journal dated 5/19/97 highlights this lack of connection:

> *At this point, in the midst of five other students working on different learning activities, we talked about Roland's effort [on his essay]. At first he expressed concern as to whether or not he would be able to complete the GED Writing test within the prescribed time limits. Then he said, 'I'd like to see these people put together a home entertainment center under these conditions.' He questioned our discussions about multiple intelligences. 'What good is it being intelligent this way [spatially]? I might as well stick to woodworking.' I asked Roland if he had used a web to collect his ideas. He told me he hadn't. Roland seemed a little calmer after our talk, and he set to work rewriting his essay. His revised copy was not only better constructed, his handwriting also showed less anger and frustration.*

In the "Reflections" section of my notes for the evening, I express my dismay that I had not picked up on something that Roland had said that night during our conversation. "I had been so concerned that Roland had not used a web to plan his essay, that I completely overlooked the fact that he had said something far more significant. He had acknowledged his spatial intelligence" (Personal Journal, 5/19/97). This was a big step in his internalizing his unique profile of strengths.

By June, Roland had recognized that a web was as an effective way for him to gather his ideas before attempting to write an essay. Like many students, it had taken a while for him to internalize this realization. Roland's path to understanding his intelligences was typical of many adults in my class – awareness first, then acceptance and finally willingness to apply what he has learned.

While I was able to gather a lot of information regarding Roland's intelligences from my discussions with him and my observations of him in class, unfortunately I was not able to learn a lot about him from his dialogue journal entries. In my teacher journal I describe him as "a man of few words" (Personal Journal, 1/29/97) On the other hand, I was able to learn about many of my other students by analyzing their dialogue journal entries. Even Mike, who started out writing very little at the end of each class, became more comfortable with this method of communication as time went on.

Finding 2A: Through communication in dialogue journals, many students were able to explore their intelligences in greater depth.

Betty

One student who revealed a lot about herself in her dialogue journal right from the beginning was Betty. Below you will find her AMI Assessment Survey grid and excerpts from a running dialogue taken from her journal entries. This information was extremely helpful when we formulated a more comprehensive view of her strongest intelligences.

Name: **Betty**

Adult Multiple Intelligences Profile

	Musical	Bodily/ Kinesthetic	Linguistic	Logical/ Mathematical	Visual/ Spatial	Interpersonal	Intrapersonal	Naturalist
Very Much	X					X		X
A Lot					X			
Somewhat			X				X	
Just a Little								
Hardly at All		X		X				

I want the reader to understand that the following actually only represents a very small portion of our correspondence with one another between September and December 1997. I have included these selected excerpts, nonetheless, to show the reader how valuable the dialogue journals were to my research and to emphasize their importance in establishing an atmosphere of trust and understanding between student and teacher. Betty's comments are in regular print; mine appear in italic.

> 9/15 The ... meeting with the group discussion was very good...Upon my first day of class [I was] quite nervous.
>
> *9/16 You mentioned one thing...that I'd like to explore further. You said, 'The thought of failure scares me to death!' I wonder, with all the successes in your life, why you still have this fear. I also like to think of 'failure' as an opportunity to learn from your mistakes. Thomas Edison had many, many failed attempts when he was working to develop the electric light bulb...He saw that each failure was a chance to learn what wouldn't work.*
>
> 9/17 I appreciate your comments also on my first night of class. The math will be the hardest but I will conquer it.
>
> *9/18 Let me know how your math is coming along. What do you find helpful? What would you like to see done differently?*
>
> 9/22 The tape on Multiple Intelligences Profile...was a good exercise to make you think then show your weaknesses and strengths.
>
> *9/23 Now I'm interested in learning what you think are your strengths. Building on your intelligences will help you with subjects like math. Too often people try to learn new material by using the old ways which never seemed to work in the first place. I hope you'll be able to come up with the best ways for you to learn.*

9/24 Class is going fine. I really appreciated the extra help in the math department. When being shown how to (rather than trying to grasp from a booklet the needed instruction) makes it much easier. I feel a lot more comfortable in class this week...I really look forward to coming to class but to also see new friends.

9/25 It was good to hear that you're feeling more comfortable in class...Being comfortable helps to bring down a lot of the defenses that made learning difficult in the past.

10/8 The math does seem easier now than in the beginning but it still is confusing at times. Yes, the addition and subtraction are easy but questions like: which is larger 1/8 or 3/4? I have to do the actual math. Maybe I am too hard on myself but that is only because I want to succeed.

10/10 I'd like you to try using your visual/spatial intelligence when comparing fractions like 1/8 and 3/4. We'll start with actual fractions pieces and then try forming a mental picture of them which you can draw upon in the future. Also try using your linguistic intelligence to describe a fraction. Example. "1/8 means break a whole into 8 equal parts and look at one of those eight pieces." Try actually visualizing yourself cutting a cake into eight pieces and eating one of the pieces. Have you eaten much of the cake? Now try visualizing cutting the cake into four pieces and eating three of the four (3/4) pieces. Have you eaten much of the cake?

10/13 Tonight's class went by quickly. I miss the other classmates but it is nice to be able to have individual help. Class is easier now than the start...I look forward to Monday and Wednesday class....I am determined to do this because graduating means everything to me. I want to fill a void that has been with me for many years plus it will give me one more accomplishment in my life.

10/14 Your enthusiasm is catching....What have you learned about yourself as a learner so far?

10/15 Thank you for 'your' comments about my positive comments....I have learned that I can do this program if I work [at] it. I have also realized (learned) that I am very fortunate in some ways such as: being in the work force with a good job, being successful in that job, having experienced many different life events that I feel [help] me to pursue my diploma.

10/16 You sound like a person who knows herself well. I think your intrapersonal skills are just as strong as your interpersonal skills. You are able to set goals for yourself, carry out the plans needed to achieve your goals, meet challenges and reflect on the positive and negative events in you life.

> 11/5 Compared to others in the class, I feel like the 'oldest beginner'. By that I mean, I'm the oldest member of [the] class and have only participated in a few of the activities. I have enjoyed the recruitment project the best because a lot of the material we used were very familiar to me and I could share my knowledge. The most helpful activity will be the autobiography unit. This project will enable me to find or to become more aware of weaknesses and will hopefully lead me to strengthen them....I like your way of remembering the math. The visual can help and make the learning of the fractions easier.
>
> *11/6 You have such a way with words! I love your expression 'oldest beginner.' The more I get to know you, the more I think that your linguistic intelligence is stronger that you may believe.*
>
> 12/3 You are right in saying I have accomplished a lot in three months. The one thing I have learned about myself is that I can do it and not underestimate myself.

As my research came to an end, Betty wrote the following piece to describe her participation in the AMI Project.

> *While attending The Tutorial Center and completing my high school education through The Vermont Adult Diploma Program, I was able to acquire knowledge about myself that I never knew existed. Meg Costanzo, my instructor for the program, was very instrumental in teaching me about multiple intelligences... she gave me a little exercise to do to see what my interests were in several categories. This was actually a fun task to perform...It was amazing to learn about my intelligences and to identify with them.*

B. How can teacher and student, working cooperatively, use the understanding of these intelligences to guide the learning process?

This next part of the "Findings" section shows how the students and I applied the information about their strongest intelligences during our classroom interactions. Working with the students to make them aware of their unique intelligences profiles led most of the students to become more willing to take risks and experiment while learning. I will begin my answer to Part B of my research question by referring back to Betty, whose profile the reader has just examined above. Betty's experiences with self-reflection mirror those of many of the students with whom I worked during this project.

Finding 1B: Through the process of examining their strongest intelligences, the students gained self-knowledge that helped them increase their confidence as learners.

Betty told me during one of our first classes on September 17, 1997, that she would find it a challenge to write a poem about why people might admire her. In my anecdotal notes for that evening, I write that she mentioned that she would have trouble praising herself because she was so used to putting herself down instead. As the semester progressed, Betty became more willing to contemplate her strengths and view herself in a more positive light.

Throughout the period of time I worked with Betty, I saw more and more evidence of her growing self-confidence. This was reflected in her journal entries (see above), our interviews and her increased willingness to help other students in math. Perhaps the poem she wrote about herself best illustrates this change. During an autobiography unit the class completed at the end of November, Betty elected to write a diamante poem about herself. (A diamante is a structured poem that asks students to use adjectives, verbs, and nouns to describe a given topic.)

To me this represented a breakthrough for Betty and shows considerable growth on her part. I believe much of this positive change was due to Betty's acceptance of what she had learned about herself as a result of our discussions regarding multiple intelligences.

B. Findings

- Through the process of examing their strongest intelligences, the students gained self-knowledge that helped them increase their confidence as learners.
- Generally, self-knowledge also led to an increase in the students' willingness to experiment withnew, nontraditional learning strategies.
- Students need to have MI-inspired learning strategies demonstrated to them frequently and repeatedly before they will feel comfortable utilizing them.
- Students prefer to have a choice in how they demonstrate what they have learned.
- When given open-ended challenges, that allow them to draw upon their strongest intelligences, students begin to approach problem solving in unique ways, looking at this process from "outside the box."
- The application of MI theory in adult learning contexts can inform the instruction of reading and writing, as well as mathematics.
- Each student's individual intelligence profile dictated the type of learning strategy that I would emphasize during our sessions together.
- Changes in students' approaches to learning appeared to be accelerated by their knowledge of their unique multiple intelligences profiles and their work on activities and projects inspired by MI theory.
- Teachers should pay particular attention to the personal intelligences when designing a program for adult learners.
- Adult students are enthusiastic about real-life projects and are willing to take a role in how their learning programs are designed.
- Many adult students would prefer to work in groups and help each other learn.

Betty
Dependable Diligent
Giving Working Shopping
Woman Jay Corrine Rae
Betty Smith will be a graduate in June.
Lynn Jimmy GrandAm Cats
Golfing Selling Cleaning
Generous Courteous
Smith

Finding 2B: Generally self-knowledge also led to an increase in the students' willingness to experiment with new, nontraditional learning strategies.

Mike

Mike is another student whose awareness of his strengths helped him overcome some learning difficulties, especially in the area of mathematics.

Name: Mike

Adult Multiple Intelligences Profile

	Musical	Bodily/ Kinesthetic	Linguistic	Logical/ Mathematical	Visual/ Spatial	Interpersonal	Intrapersonal	Naturalist
Very Much								
A Lot		X						X
Somewhat					X			
Just a Little	X			X		X	X	
Hardly at All			X					

My teacher journal entry from the evening of April 30, 1997, helps to create a picture of the "math paralysis" experienced by Mike prior to his acceptance of his strongest intelligences. My aim since January 1997 had been to encourage Mike to use his strongest intelligences when working in math, especially in relation to word problems. Mike seemed willing to accept that he had strengths and there were alternative ways of learning, but he was unable to put this awareness into practice.

> *I began the lesson by copying the glossary definitions of area and perimeter on the board. I then asked the student (Mike) if he could recall the formulae for calculating the same. After some initial difficulty, he was able to come up with the two formulae. We discussed the fact that, even though we had worked on this subject matter last Wednesday, the concepts were*

> *already becoming fuzzy, especially area. We talked about how traditional lessons are typically presented in either linguistic or logical-mathematical formats, and how these two ways of learning something might not be the best ones for him.*
>
> *I then asked Mike to try using a different intelligence to record the meaning of the two terms. He decided he wanted to use his spatial talents to graphically represent perimeter and area. His drawing for perimeter was clearer than his one for area. I then gave him this problem to solve:*
>
> ***Consider rectangle ABCD. If side AB = 12 inches and side BC = 9 inches, what is the area of triangle ABC?***
>
> *Mike expressed confusion about how to proceed. I asked him what intelligences were evident in the problem. He noted linguistic and logical-mathematical. We discussed how he needed to approach the problem using his strongest intelligences – that he had to translate the information into a form that would be easier for him to process. Mike appeared physically relieved when I offered this suggestion. After a short time, he had the problem solved. I had him cut the rectangle into two parts to prove that his answer was correct. Then I asked him to come up with a notation for his resource book that would help him remember how to solve a similar problem in the future. Mike drew a rectangle, divided into two equal parts, and shaded the two parts in different colors.*

My reflections on this part of the evening's lesson indicate my concern that Mike was still stymied by these types of math problems.

> *Despite the use of manipulative materials in previous lessons, Mike is reluctant to begin the problem solving process in a non-traditional way. He has not "bought into" the concept that he should draw upon his strongest intelligences when initially approaching a problem. Yet he is quite willing to use such materials when prompted to do so.*

Despite this, I sensed that Mike's understanding of his strongest intelligences could provide a way to get beyond this difficulty.

> *I was surprised that Mike was so comfortable with MI theory. He seems to have a better understanding of the different intelligences than I expected. I had expected him to be thrown off by some of the terminology, but Mike uses the terms with surprising accuracy. Once again, I note that Mike is showing signs of having a stronger logical/mathematical leaning than I previously would have thought.*

Finding 3B: Students need to have MI-inspired learning strategies demonstrated to them frequently and repeatedly before they will feel comfortable utilizing them.

At this point in the research project, I became aware that it would take a considerable amount of modeling and practice before I would begin to see any significant changes in how the students approach the learning process. I decided to include more open-ended math problems in my lessons and found that the students liked experimenting with challenging problems. On the evening of May 7th, I tried this approach:

> *I gave the students an area problem involving an L-shaped figure that was labeled in such a way that they had to figure out some of the unmarked sides before they could begin computing the area. Jennifer and Mike worked together. Jennifer came up with the missing dimensions and explained how she arrived at the answer. Then Mike determined that, by squaring off the figure, computing the entire area, and subtracting the squared off portion, the area of the L-shaped figure could be found. He explained the process to Jennifer, who caught on quickly.*
>
> *I then asked the students if they could come up with another way to solve the problem. After a short period of time, Jennifer noticed that you could make two rectangles from the L-shaped figure by extending one of the lines. The students then found the area of the two smaller rectangles. We checked the answers against the first solution.*
>
> *Next I gave them four toothpicks and asked them to think of each toothpick as one unit. The problem was to find a geometric figure with a perimeter of 4 units. Jennifer immediately made a one unit square. I asked if there were any other solutions. Jennifer made a parallelogram. I encouraged the students to find other solutions. Mike suggested breaking the toothpicks in half. The students made a hexagon and an octagon from combinations of pieces. I asked the students to prove that the perimeter of each figure was 4 units. Jennifer put 4 other toothpicks end to end and then compared the component pieces against this 4 unit line.*
>
> *I then asked the students to make another rectangle with a perimeter of four units. Mike combined one and a half units to come up with a rectangle that was 1 ½ by ½.*

After the lesson was over, I reflected on the success of this approach.

> *The students really enjoyed the challenge of solving problems with multiple solutions. At the end of the evening, Mike told me that he had really enjoyed class this evening. He described the session as 'intense.' I want to ask him why he felt that way. Perhaps it is because he is more engaged in the activities now that he has more of an opportunity to draw upon his strongest intelligences as he works through the problems.*

I thought they might have been more intimidated by this type of problem. Instead they dove right into solving them.

The students are using manipulatives without prompting from me. They are more comfortable with ambiguity.

Finding 4B: Students prefer to have a choice in how they demonstrate what they have learned.

Both Betty and Mike confidently drew upon their strongest intelligences when they were doing a review lesson on measurement. The following is an entry from my teacher journal dated December 3, 1997. It describes how each student chose a different way to represent his/her understanding of the material we had been studying.

Description of Lesson *I had the class divide a large (12" x 18") piece of white paper into eight boxes. Then they numbered each box #1-#8 on the front and #9-#16 on the back. I told them that I was going to name various units of measure. They were to write or draw whatever comes to mind when they hear that term. The units I mentioned were the following:*

1. Inch
2. Cup
3. Milliliter
4. Quart
5. Kilometer
6. Gram
7. Liter
8. Pint
9. Meter
10. Yard
11. Millimeter
12. Gallon
13. Foot
14. Centimeter
15. Kilogram
16. Pound

Observations *As soon as I gave the directions to the lesson, Betty said, 'This is a good idea.' The students completed the assignment quickly, with little hesitation. I noticed that those who were drawing needed greater time to complete each section. When we began a wrap-up of the activity, Betty said, 'The metric ones are the harder ones.' Mike mentioned that he used mostly drawings to represent the units. 'How would you make a cup? You'd draw it.' Carolyn frequently used equivalents written in equation form to show her understanding of the relationships between the various units. Betty was more likely to write out descriptions of what came to mind when she heard the term. For example, when I said the word 'pint,' Betty wrote 'heavy cream,' Carolyn noted that 2 cups = 1 pint and Mike drew a measuring cup showing two cups equaling one pint. The same was true for the term 'quart'; Betty wrote 'milk,' Carolyn noted that 4 quarts = 1 gallon and Mike drew a quart of milk.*

> ***Implications*** *I was very encouraged by the diverse approaches that the three students took in completing this assignment. I sensed that the students were comfortable in selecting their own methods to record their responses. No one stated that his/her answers were 'wrong' or 'should have been' like someone else's. I was pleased that the students had the confidence to tackle the assignment on their own terms. Old habits are dying!*

In addition to having choices when doing individual lessons, the students also responded very positively to having choice in what they learn and how they present evidence of their understanding during project work. A quote from my December 1997 interview with Mike sums up the typical student's attitude about the projects we completed as part of this study.

> *I like the class projects. Everyone gets to participate. You have choices. You feel more comfortable when you have choice. Then you're willing to do more and you do better.*

Other students frequently voiced this same attitude during our interviews. (See page 25.)

Finding 5B: When given open-ended challenges that allow them to draw upon their strongest intelligences, students begin to approach problem solving in unique ways, looking at this process from "outside the box."

Mike's math skills continued to improve as he progressed in our program. I was struck by how comfortable he had become working on word problems when I reviewed a video taken on March 30, 1998, the evening of our last class together. I had given the students the following challenge: *Making only three cuts, slice a donut so that you end up with at least 10 pieces.*

My notes written after viewing the video indicate how Mike approached the problem.

> *Mike notices that the challenge doesn't call for making equal pieces and states, 'So they don't have to be equal pieces.' He starts drawing a donut on a piece of paper.*
>
> *Mike says, 'You could do it on paper. If you do it on paper, you don't have to stop.' I ask him to demonstrate what he means. He asks me to draw the donut on the board, so I do as he approaches the front of the room. Mike begins by drawing the lines of the cut in the air above the board. He says he will be able to get about 12 pieces out of one cut and proceeds to draw a serpentine line that weaves through the donut with one continuous motion.*

In our wrap-up discussion, I ask the class if there is anything they learned from this exercise that could be applied to real life problems or challenges. Mike tells the class to look beyond the obvious.

> *Mike replies, 'Things aren't always so cut and dry...Everything's not norm, as norm would be.'*

I note in my journal entry for the night that I am pleased to see the level of confidence Mike and the

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other students displayed as they went about this task. Before our work on this project, the students probably would have been more reluctant to take the risks involved in meeting this type of challenge. Their understanding and appreciation of their intelligences gave them permission to try new approaches to learning, to experiment, to take risks.

Finding 6B: The application of MI theory in adult learning contexts can inform the instruction of reading and writing, as well as mathematics.

Jennifer

When I began participating in this project, I could see more clearly how the application of MI theory could inform the instruction of math, but I was less sure how I could apply the theory to the teaching of reading and writing. My work with Jennifer helped me broaden my understanding of MI's implications.

One of Jennifer's self-stated goals in our program was to improve her reading comprehension. She felt she was too easily distracted when reading and, therefore, her retention of information was poor.

Name: Jennifer **Adult Multiple Intelligences Profile**

	Musical	Bodily/ Kinesthetic	Linguistic	Logical/ Mathematical	Visual/ Spatial	Interpersonal	Intrapersonal	Naturalist
Very Much		X			X	X		
A Lot	X							
Somewhat			X					
Just a Little				X				X
Hardly at All							X	

As I began my work with Jennifer, she was quick to pick up on her learning strengths. In her dialogue journal dated March 21, 1997, Jennifer writes,

> *I realized that I learn faster by visual. I like working by myself. I am very easily distracted. It's not really that I learned more about myself it's just that I never really thought about that kind of stuff!*

After drawing attention to her strongest intelligences, I suggested that Jennifer use a combination of these strengths to help her improve her reading comprehension. I pointed out to her that good readers are always questioning themselves as they read in order to self-monitor their comprehension; I had Jennifer practice a similar technique whereby she came up with questions for each paragraph she read. She wrote the questions down on one side of a paper that was folded in half from the right hand edge to the margin. After composing the questions, Jennifer then wrote the answers on the other side of the fold. In effect, Jennifer was having a "conversation" with herself as she read. Writing the information down helped to reinforce comprehension. When Jennifer wanted to review the matter, she could fold over the part with the answers, reread the questions and then determine for herself her level of understanding. In her dialogue journal for the evening after this lesson, Jennifer expresses her opinion about this technique.

> *Thanks for explaining that there are different ways to take notes. I think these will help me a lot!*

Jennifer's response to this method of improving comprehension was positive. In my anecdotal notes, I write,

> *Introduced to "learning to learn' method for improving comprehension. Quickly understood how to format Q and A. Was able to locate information easily.*

I also encouraged Jennifer to focus on any pictures that accompanied the material she was reading. While we were working on a biography of Harriet Tubman, she told me that she found the illustrations helpful in comprehending the story. Jennifer also seemed to enjoy discussing "what if" questions such as, "If you had been a slave in the South, would you have attempted an escape using the Underground Railroad? Why or why not?" My anecdotal notes from the evening of 10/20/97 indicate how Jennifer is responding to reading activities designed to encourage the students to draw upon their strongest intelligences as they read.

> *Read chapter in bio of H.T. – good comprehension – has thoughtful look on face during discussions. Noted that she learns best visually.*

I then suggested to Jennifer that she form her own illustrations in her mind as she reads. We practiced reading a few paragraphs at a time, and I asked her to tell me what images she had formed as we went along.

Finding 7B: Each student's individual intelligence profile dictated the type of learning strategy that I would emphasize during our sessions together.

A dialogue journal response that I wrote to Roland on May 15, 1997 exemplifies this personalized approach.

> *I have been giving a lot of thought to what you said about taking the GED Writing Test. I can understand your concerns about the time limits. Unfortunately, they are a reality that you have to deal with. The challenge that faces you is to see how you can take advantage of your strengths to overcome some of the obstacles that you feel are in your path.*
>
> *I would like you to think about how you would go about putting together a home*

> *entertainment center. Break the process down step-by-step. What do you need to finish the job? What do you do if you make a mistake? What do you do when you become frustrated by the job? I'd like you to share your thoughts with me. You could do this by writing an essay about the subject, or you could simply tell me what you do. You could also write up a step-by-step list of how you would handle the task, or you could make a video showing me what you would do. I don't care how you present this information - I'll leave that decision up to you. I am interested in knowing how you go about a job like this. Perhaps we can take some of the things you have learned doing this type of work and apply it to 'constructing' an essay. What do you think?*

As one takes note of the different lessons and projects that I used in my class, the reader may come to the realization that many of the teaching techniques I have presented are not necessarily new or revolutionary. The difference was in my students' willingness to accept that there are different learning approaches and to understand which approaches work best for them individually. This was not a change that took place overnight; the awareness and acceptance had to be nurtured and encouraged over time.

Finding 8B: Changes in students' approaches to learning appeared to be accelerated by their knowledge of their unique multiple intelligences profiles and their work on activities and projects inspired by MI theory.

Before I go on, I would like to bring you up to date on the four students whose case studies I have highlighted on the previous pages. Roland did take the writing portion of the GED exam and passed with a respectable score. He was so pleased with the essay he had written that he wanted the testing center to give him a copy of his paper. Jennifer passed the reading and written math portions of her diagnostics tests for the Vermont Adult Diploma Program. Although work commitments have kept Roland and Jennifer from progressing any further toward meeting their educational goals for the time being, I hope that both will pick up their studies again in the fall. Betty and Mike completed all their testing and requirements for the adult diploma program and graduated in June 1998. Of course, I cannot state unequivocally that these results were directly the result of my use of MI-inspired activities and projects in our class. However, I have to believe that, based on the overwhelming positive response by the students to this new approach to learning, the application of MI theory in an adult learning context did play a major role in the successes achieved by the four students studied above, as well as the successes of a number of other students with whom I worked over the period of this research project.

Finding 9B: Teachers should pay particular attention to the personal intelligences when designing a program for adult learners.

I would have to say that my most surprising finding is how the personal intelligences emerged as such an important element in my research. Eventually, some of the methods I developed as a means to help me gather data for the project – dialogue journals, self-assessments and interviews – became, in themselves, an end; they served as a model for good classroom practice and a method for nurturing and developing the personal intelligences. My students responded positively to those types of activities that emphasized the interpersonal and intrapersonal intelligences. They showed a preference for group activities and social interaction. They demonstrated a growing acceptance of constructive feedback, especially when it came from their peers. Additionally, they were receptive to those activities that helped them to recognize their strengths, accept limits, take risks and expand their horizons. Through our work on MI-inspired lessons and projects, the students learned to tackle problems in an original way, persevere and overcome frustration. Most students seemed thirsty for the opportunity to develop their personal intelligences.

With this in mind, I would recommend that teachers consciously incorporate those types of activities that promote growth in the personal intelligences into their academic program:

Interpersonal

- Activities involving strategizing
- Oral presentations
- Panel discussions
- Debates
- Team building
- Community service
- Reciprocal teaching
- Group design

Intrapersonal

- Autobiographies
- Interest inventories
- Predictions
- Personal narratives
- Goal setting
- Reactions to open-ended situations
- Personal time lines
- Stories involving life experiences
- Portfolios
- Collages
- Photo displays
- Self-portraits

Finding 10B: Adult students are enthusiastic about real-life projects and are willing to take a role in how their learning programs are designed.

The students reported enjoying both the MI-inspired lessons and projects we did in class. While contextual constraints prevented the students from working on projects of a more long-term nature, they told me that they liked our shorter term learning projects. I think that was because these projects could be completed in a relatively short period of time. The students appreciated having a choice in what they could do for these assignments. For example, the class worked on the following challenge in the fall of 1997: *How can we, as a group, encourage other adults to attend classes at The Tutorial Center?*

When we began our planning, one student asked me if we were really going to carry out the ideas that we came up with or if this were "...just an exercise." When I told the group that we were actually going to try to attract new students into our program, they tackled the challenge with added enthusiasm. The students designed a new flyer for our center, interviewed former graduates to obtain their feedback, wrote a public service announcement, brainstormed ways to improve the sign in front of our building, and conducted a survey to determine which type of sign would be the best advertisement for the center. Throughout the project the students were able to display their intelligences by selecting activities that allowed them to showcase their strengths.

While I was sifting through my data and sketching out the themes that I saw emerging in relation to my research question, I began to realize more and more how my students had become "co-researchers" with me on this project. For my December 1997 interview, I decided to ask them what they thought I should tell other teachers about our classes and what advice they would want to give teachers to help them plan effective lessons for adult learners. Their responses support the significance of emphasizing all the intelligences and, in particular, the personal intelligences when planning an ABE program. I have categorized their comments into four main categories:

1. Spend time getting to know the students' strengths.
   Mike: Know the person you are teaching.
   Betty: Listen to the student's needs.

2. Encourage students to draw upon their intrapersonal intelligence.
   Mike: Students have to know their goals.
   Betty: Some students are doomed before they begin if they don't have the right attitude. The students have to bring something to this, the desire to do their best. Otherwise it won't work.

3. Plan varied lessons that can reach the students through their strengths.
   Mike: [The MI] profile will help you know which way to teach. Look for similarities in profiles and use that approach.
   Betty: Try to figure out why we don't understand something and then use a different approach, not just the same thing over and over again.
   Carolyn: You benefit from problem solving activities.
   Jennifer: The math activity [review game] was very effective. Use more "hands-on" activities.
   Mike: Use different learning tools.
   Betty: Use creative ways to get the students involved, like the cubes [Autobiography Unit] and the measurement activity. They make learning fun and interesting. MI theory can help because it leads to creativity in lesson planning.
   Carolyn: Make the lessons understandable, give clear instructions, talk about it, give an example.
   Jennifer: I liked [the units or projects] personally, like the cube and the time line [Autobiography Unit]. They helped me think more about myself this time. I'm usually thinking about others. This gave me time to think about me.

4. Plan activities that encourage students to draw upon their interpersonal intelligences.
   Carolyn: Sometimes we work together in a group. If one person doesn't understand, we work together.
   Jennifer: Learning is easy because it's mostly done as group activity.
   Mike: Get everyone to participate.
   Betty: Group activities are important. Through interaction with others you learn more.

This last section of student comments surprised me the most and led to my final finding regarding how an understanding of MI theory can guide the learning process:

Finding 11B: Many adult students would prefer to work in groups and help each other learn.

ADDITIONAL FINDINGS

Offering an MI-inspired program to adult learners can lead to increased enrollment and improved attendance.

My research resulted in a few unexpected outcomes. The first involved enrollment and attendance. As I just detailed in the previous section of this paper, one of the team building activities we worked on during this project called for the students to meet the challenge of recruiting more students into our program. During the wrap-up to this project, the students calculated the change in our class enrollment from December 1996 to December 1997, a full year since we had begun working on the AMI Project. They were excited when they realized that our figures were up 80% during that time. I later went back and looked at actual student hours of attendance compared to total classroom hours scheduled during the same period. Surprisingly, this figure grew by almost 220%. After reviewing the data provided in our dialogue journals, my teacher journal, interviews and observation reports, I am confident in proposing that this increase in class participation is due, largely, to the MI-inspired changes I have made in our program, particularly the heightened emphasis on developing the personal intelligences. Our increased attention to the personal intelligences transformed our group from simply an adult basic education class into a community of learners, or, as Betty termed it, our "class family."

Additional Findings

- Offering an MI-inspired program to adult learners can lead to increased enrollment and improved attendance.
- Both low scores and unrealistically high scores on the Personal Intelligences Cluster may be "red flags" to alert the teacher that these students need special attention in order to encourage them to remain in an ABE program.
- The incorporation of MI-inspired lessons and projects into the curriculum can have a positive influence on teacher/student relationships.
- Awareness and understanding of MI theory will influence a teacher's understanding of his/her own personal and professional strengths.

Both low scores and unrealistically high scores on the Personal Intelligences Cluster may be "red flags" to alert the teacher that these students need special attention in order to encourage them to remain in an ABE program.

When I examined the results of the AMI Assessment Survey that the students completed as part of this research project, I found some interesting patterns and new questions began to emerge for me.

A total of fifteen students listened to the AMI Assessment Survey and developed their profiles. I took their responses, assigned them a point value and posted the scores on a class profile chart. (I did not include the naturalist intelligence on this chart because not all of the surveyed students had the opportunity to respond to this scenario.) In order to illustrate how I did this, I have shown Betty's profile and scores below.

Intelligence	Response	Point Value
Musical	Very Much	5
Bodily/Kinesthetic	Hardly at All	1
Linguistic	Somewhat	3
Logical/Mathmatical	Hardly at All	1
Spatial	A lot	4
Interpersonal	Very Much	5
Intrapersonal	Somewhat	3
	TOTAL	**22**

I then grouped the scores of certain intelligences into clusters.

Linguistic & Logical Mathmatical	4
Interpersonal & Intrapersonal	8
Bodily Kinesthetic & Spatial	5

Upon examining the class profile chart when it was completed, I noticed an interesting correlation between how the students responded on the survey and the likelihood that they would remain in class long enough to meet their educational goals. Of the five who left the program after only attending a few classes, two had very low total scores when compared with the class average (total scores of 14 and 16, compared with a class average of 20.6), two had scores in the average range, while the fifth student had a total score of 31, fully ten points higher than the average and six points higher than any other students who completed the survey.

When you examine their scores in the Personal Intelligence Cluster, another pattern emerges. While the class average is 5.9 in this cluster, three of the five students being discussed had scores of 3, 4, and 5, respectively, while the fourth student had a score of 7 and the fifth was the only student in the entire group who scored a high total of 9 in this cluster. Although this is a very unscientific study, it made me think about how this type of information could be helpful to a teacher.

The incorporation of MI-inspired lessons and projects into the curriculum can have a positive influence on teacher/student relationships.

I developed a very different relationship with my students as time evolved during this project. I remember reading somewhere when I first started working with adults that in order to have an effective adult basic education program it is important for the teachers to be peers of the students. I was rather taken aback by this statement, for although I did not consider myself better than my students, I certainly felt my level of education, economic position and background made it difficult for me to consider myself their peer. Our involvement in the AMI Project has given all of us a chance to get to know each other on a different level. Even though I had always had a good rapport with my students, I have learned things about them while doing this research that I possibly never would have known otherwise. Silja noted a "palpable sense of camaraderie" upon visiting our classroom. One student described this as our "class family." I have a much deeper understanding and appreciation of my students' strengths as a result of my work on the project, and I certainly have come to recognize how the students are indeed my peers. I am humbled by this experience and much the wiser as a consequence.

Awareness and understanding of MI theory will influence a teacher's understanding of his/her own personal and professional strengths.

Finally, my involvement in the AMI Project was a tremendously rewarding experience. I not only grew professionally, but also personally, as a result of my work. My knowledge of MI theory caused me to look at myself differently, recognize my own strengths and have the courage to take risks developing some of my weaker domains. Diane Paxton, one of the researchers with whom I have worked on this project, said something when we first started working on our research that has stuck with me for the past year and a half. She remarked that we would not be the same people who we were at the beginning of the project when we reached its conclusion. That is certainly the case for me.

DISCUSSION

> *Probably the most important [educational] implication [of MI theory]... is to take differences among individuals very seriously, to know as much as you can about each of the individuals, and try as much as possible to gear and to fit your approach to what you know about that individual.*

Howard Gardner
Address to the New England
Conference on Multiple
Intelligences in ABE/ESOL

Implications

My work involving the application of MI theory at the adult learner level has given me a new lens with which to view adult students. This experience has also given the adult learners with whom I worked the opportunity to contemplate on how they learn best and a vocabulary to express their reflections. I had the chance to develop or modify teaching strategies that work best with adult learners, allowing them to demonstrate a variety of strengths and talents. Because the students accepted and acknowledged their intelligences, they were more willing to respond to these non-traditional teaching strategies and take on the responsibility of discovering for themselves how they learn best. I expanded my methods of assessment to allow students to demonstrate their knowledge of the subject matter in alternative ways.

Because of my involvement in the AMI Project, I have come to recognize a new dynamic that emerged in my class. I come away from my research with a revised model for an effective ABE classroom, one that is less teacher-centered and which gives the students a greater voice in what they study. It is a classroom that emphasizes personal growth as well as academic development. It is a model that encourages students to solve real life problems and develop a variety of skills they will find useful in the future.

ADVICE TO OTHER PRACTITIONERS

> *Don't drop what Success for All has established, or Reading Recovery, in order to buy an 'MI Kit' and have people dance around and read; that would be a poor strategy.*
>
> **Howard Gardner**
> Address to the New England
> Conference on Multiple
> Intelligences in ABE/ESOL

When I heard this statement during Gardner's address to the conference, I was particularly impressed by these words. In my thirty years as a teacher, I have seen fads come and go in education. I was weary of new programs that were touted to be "the" only way to teach and tired of implementing program after program as they phased in and out of favor. Gardner's message to educators was refreshing. Instead of abandoning those aspects of our programs that we have found successful, he urged us to keep doing what we recognize as sound educational practice. He also encouraged us to experiment with his theory as we saw appropriate. "Try it out; see what works." In other words, celebrate our successes, but investigate what we can do better in light of what the theory has to offer to us as thoughtful practitioners.

With this in mind, I would urge teachers to read about MI theory and spend some time reflecting on their own strongest intelligences. I suggest that they encourage their students to think about their strengths too. Again I have to state how powerful a tool the use of dialogue journals was in this respect. I would also suggest that teachers read through some MI-inspired lesson plans, with an open mind as to how they might be adapted to their particular adult learning contexts. I would challenge them to see how similar ideas could work and warn them not to dismiss new ideas too quickly before giving them a chance to succeed. I would recommend that teachers clearly articulate to their students the advantages of an MI-inspired ABE program. I would caution teachers to have patience implementing new teaching techniques. I would encourage them to model new learning strategies frequently and repeatedly. Finally, I would strongly urge adult educators to find the time in their busy lessons to nurture and promote the personal intelligences. It is my finding that time spent doing this reaps rewards for the learner far greater than time spent purely on academic tasks.

NEW QUESTIONS

Adult learners already have a sense of who they are; what they can do; what they can't do. That's a good starting point, but some of those conceptions many not be well motivated. They may think there are certain things they can't do and that may be wrong. And part of your challenge is to help them see that there are ways in which they can do those kinds of things. So intrapersonal intelligence in a learning society is tremendously important.

Howard Gardner
Address to the New England
Conference on Multiple
Intelligences in ABE/ESOL

I think it would be interesting to pursue an investigation of the relationship between the student's understanding of his/her personal intelligences profile and the likelihood that the student will make a commitment to continued participation in an ABE program. Our Center is presently considering ways that we can better meet the educational needs of our younger adult population. It is my belief that many of the students who are in their teens and early twenties when they enroll in our program have not developed their personal intelligences and, therefore, may not possess the necessary skills to succeed in meeting their educational goals. This is particularly true of the young men who enroll in our program. In the group of five students who left my program without making any progress toward meeting their educational goals, the three students with the lowest score in the Personal Intelligences Cluster were males 16, 18, and 23 years old, respectively. I believe that a program that is especially designed to help students explore their personal intelligences might help with student retention. In particular, I feel that involving the students in the design of this program would be beneficial. Many adult students, especially those who have recently left school, expect education not to be interesting or worthwhile. Getting them to explore these feelings and to become involved in designing their courses of study could prove to be the key to their success.

I would be very interested in working with our staff at The Tutorial Center in an effort to adapt MI-inspired strategies to this particular population. My "burning question" would be "How can MI theory inform the development of curriculum materials designed to encourage young adult students to succeed in ABE programs?"

I would like to end this paper with two quotes from the dialogue journal of Donna, one of students who first worked with me on this research project. I have used this selection in my writings a number of times because, to me, it sums up the promise that MI theory holds for adult learners.

On February 5, 1997, after our class discussion about Multiple Intelligences, Donna wrote the following entry in her dialogue journal.

> *I haven't really had time to think about where my strengths are. I just know my weaknesses and that sometimes worries me. I always knew everyone had strengths and weaknesses but I always worried about the things I couldn't do and not the things I could.*

A month after she wrote the journal entry above, I asked Donna to reflect on the completion of our first team building project. Again in her journal she wrote,

> *First of all I really believe that our project was a success for two reasons. 1) We all worked together and worked for something that we thought was important. 2) That you have inspired us to open our minds and have [the] belief that we are capable of almost anything if we really want to do it…I need a new focus and this is very interesting to me. I really want to thank you for being a good friend, teacher and listener. You have inspired me in more ways than one and I never thought I could feel this good about my education and my self-esteem.*

Terri D. Coustan

ABSTRACT

Terri Coustan's research efforts focus on how to use MI theory in her ESOL classroom in ways that enhance student engagement and learning. Most of her students are Hmong people from the hill country of Laos. Having worked with the same group, more or less, for the previous three years, Terri attributes her AMI findings to her implementation of an MI-informed approach, the one significant change in her classroom over the last year and a half.

Terri's approach is twofold. Through a synthesis of her informal observations of her students, she develops an understanding of their MI-related strengths and learning strategies. She then designs classroom activities that are geared to those strengths and strategies she has observed. She gives students a set of activity options for them to engage in the content of the lesson.

Terri creates alternative "entry points" into the material that give students ways of learning and expressing their understanding beyond verbal means. She finds that the MI-informed choice activities aid students' academic progress, and she offers several cases to that effect in her report. Although Terri finds that her students had difficulty understanding MI theory and were not able to identify their more specific learning strategies, they did improve their ability to reflect on their own learning.

Interestingly, Terry found that giving students choices and setting a trusting context resulted in students taking greater control in the classroom and expanding their cultural norms for classroom behavior. Terri credits her AMI inspired activities for fostering student participaton and assertiveness, a stark contrast to three years of relative student passivity.

Terri D. Coustan

RESEARCH CONTEXT

My school is located in an area known as South Providence, Rhode Island, an urban inner city area rich with many immigrant groups, but considered economically poor. The International Institute where I work provides the immigrant population of the greater Rhode Island area educational and social services, legal and immigration assistance. The three-storey building has recently been renovated and provides a comfortable and attractive setting for staff and clients.

I teach in a family literacy program. Most of the students are Hmong from the hill country of Laos. The Hmong have held very tightly to their culture. The survival of their culture in the face of Chinese domination could be attributed to their adherence to their culture and values. Their children still date only Hmong and attend cultural events in traditional Hmong clothes. Many of my students believe in the power of the shaman to keep the Hmong people healthy and happy. Most of my Hmong students came to this country about 10 years ago and are still in need of English language instruction. Most are on welfare.

To be in the class, every student has to meet at least one of four criteria: i) have had less than five years of formal language instruction; ii) be non-literate in their native language; iii) have experience in only non-Roman scripts; and/or iv) have been unable to progress in other adult education programs. The adults presented differing language abilities. Some were struggling to communicate orally, while others had difficulty reading and writing.

1. What impact do ESOL activities informed by the MI theory have on student engagement and learning strategies?

2. How do prior cultural learning and experiences shape students' reaction to and participation in ESOL activities informed by the MI theory

The class in which I focused my research project included seventeen Hmong mothers and fathers and three other adults. With the exception of a few infants and toddlers, the twelve preschool aged Hmong children spent most of their time in a second classroom with a teacher and an aide. We joined the children for snack, computer use, and occasionally other activities. The non-Hmong students included a grandmother from Ghana, and a mother and her twenty-one-year-old daughter from the Dominican Republic.

If you walked into my classroom, you would see many objects reflecting the cultures of my students. On our walls hung blown-up photographs of our Hmong students taken when they were in Laos, Chinese baskets, African drums, and Hmong dolls. Maps, books, toys, and a blackboard rounded out the learning space.

Our classroom extended well beyond the four walls of the International Institute. Most of my students were farmers in Laos, and as part of our Family Literacy Program, we as a class, gardened in three plots in the area. Older siblings came and helped with the gardening, and we encouraged them to come and join their parents in the gardens during school vacations and on school holidays.

I had been the teacher for these students for three years prior to the AMI project. We had blown out candles on birthdays, worked a vegetable garden, and attended funerals together. We were a community. This year a young Hmong college student, Tia Yang, aided my research by_translating, co-teaching, and interpreting Hmong traditions.

RESEARCH QUESTION

I began my research motivated by the need to learn more about my students and to develop a way for them to learn more about themselves. A Teacher's Journal entry from a month before I began the project demonstrated my frustrations with my limited knowledge of my class. I wrote:

> *I don't know a lot about my students. I can only observe their reading and writing. It is difficult to fit the curriculum to student needs. It is difficult to assess low level learners. They have limited ability, no reading ability, limited oral vocab. They had low expectations, limited appreciation of their abilities. They are aware of the gap between themselves and their children. They are aware of what they do not know. They hold tightly to their culture and express disappointment with its shortcomings.*

With most of my former students returning, and informed about MI theory, I began to prepare myself for eighteen months of MI research. I hoped that my students would become aware of their own intelligences and be able to use them to facilitate their literacy aquisition. I reasoned that having the students show or demonstrate their preferences for learning activities in school would help me observe their intelligences as revealed through their choices. I hoped that, in turn, I could communicate the developing MI profiles to my students if they were not able to recognize them for themselves. Therefore, I initially posed the following research question:

What effect does metacognitive awareness of multiple intelligences have on the perceptions of effective ESOL teaching and learning by students with limited native language literacy?

I reasoned that if these students became aware of multiple intelligences and their own areas of strength, they might embrace non traditional classroom activities that capitalize on their strengths. I believed that MI- based instruction would be more effective than traditional activities for learning English. In addition, I thought that the parents' views of the learning process have and should have an impact on their children's education. If their perception of an effective ESOL classroom included non-traditional teaching, the parents might advocate this approach for their children.

Since my initial findings based on student surveys, teacher observation, and peer review seemed to support the idea that my students were, in fact, already open-minded about non-traditional ways to learn English, I revised my original research question to probe into other areas. I posed these questions:

1. What impact do ESOL activities informed by the MI theory have on student engagement and learning strategies?

2. How do prior cultural learning and experiences shape students' reaction to and participation in ESOL activities informed by the MI theory?

I had planned in this research project to look at student learning strategies and student engagement as two different factors. However, I found it impractical to observe student engagement indicators such as: attendance, time on task, perseverance, body language, taking a leadership role, and helping other students to complete activities. I had difficulty documenting a wide enough sampling of students. I also found that student learning strategies were tied to student engagement in that, for the most part, students chose strategies which motivated them to become very involved. Since student learning strategies and engagement were so entwined, I viewed them as a unit.

DEFINING TERMS

"ESOL activities informed by the MI theory"

When I talk about " ESOL activities informed by the MI theory" in this report, I am describing activities in which students had the opportunity to draw on their intelligences as well as the opportunity to expand their knowledge and understanding of a topic. For example, a unit on Abraham Lincoln included daily short stories written on the blackboard, sequencing pictures, building a log cabin, group writing and making a video about Lincoln's assassination, examining coins, and studying the structure of the Lincoln Monument. These project- based activities were used in the first four months of the project. Another MI -influenced project I implemented was gardening. Since gardening was an important part of the lives of the students, it made sense to bring it into the classroom and make it the subject of a unit. The gardening unit included the following activities:

- Writing about your garden in Laos
- Constructing a greenhouse
- Sequencing photos of gardening
- Constructing a time line of life of the Laotian Farmer
- Drawing an event in the life of the Laotian farmer
- Talking and looking at photos of gardens in Mexico
- Playing a casino style board game using a large wheel

The ESOL activities informed by the MI theory also involved students choosing which activities they completed. For the theme,"Coming to America", students chose among: writing about coming to America, drawing a picture of the same, building a boat showing the same, sequencing stories story sentences, and unscrambling vocabulary words. Students were also offered activity choices throughout the week. These choice activities formed the backbone of my MI research. Student selected themes for the choice activities included:

- Men Hitting Women
- Frightened
- Going to the Casino
- Chinese Medicine
- Too Many Children
- A Parking Ticket

"Learning Strategies"

When I talk about " learning strategies" for this population of low level learners, most of whom were illiterate in their native language, I am referring to the materials, actions, and social settings that the students chose to use to help them learn. For example, if objects such as books, the blackboard, a tape recorder were chosen by students to facilitate their learning, I considered them learning strategies. I also considered the action the students used as part of the definition of learning strategies. By this I am referring to reading, writing, drawing, entry into the computer, counting, and sounding out words, to list a few. Finally, I looked at the social choices the students made around their learning. These social choices included working alone and working in groups.

"Non-Traditional and Traditional Activities and Materials"

When I refer to traditional activities and materials in this report, I am talking about books, blackboards, direct teaching, copying, and workbook activities. I use the term "non-traditional activities and materials" to include constructing with play dough, using musical melodies, bodily movement, board games, along with drama in the learning process. While both traditional and non-traditional activities had a relationship to MI by providing opportunities for students to use their strengths in the learning setting, non-traditional activities offered a greater variety of activities and provided for a greater variety of strengths.

IMPLEMENTING MI

When I started to apply MI, my teaching practice changed. I offered many more activities and more choices to my students. I also routinely asked my students to evaluate what they were doing and if the activities were helping them to learn. I expanded the scope of class projects using multiple intelligences theory as a framework for creating and adding new activities. By offering a weekly "Choose 3" lesson, an instructional approach created by Martha Jean, one of my AMI teacher colleagues, I offered more choices to my students.

I also changed the format of my lesson plans during the research project. To fully utilize the Choose 3 activity, the students created their own stories on Monday and reviewed them by entering them into the computer on Tuesday. Choose 3 further developed the theme through MI influenced activities on Wednesday, followed by a dictation and evaluation of the week on Thursday. On the Choose 3 day, I would explain and demonstrate the activities which focused on the story of the week and then invited the students to choose three activities. For example, the choices might have included sequencing a story, finding or drawing a picture, and building an object out of Legos. The activities were varied and were aimed at providing students with entry- point options for developing their understanding of the week's vocabulary or topics. These activities also provided opportunities to record their multiple intelligences.

Another change in my teaching practice was the emphasis on student metacognition, or thinking about their learning. I asked my students to reflect and assess their learning because I saw reflection as an integral part of MI theory. Becoming aware of their choices helped students to become aware of their own strengths, which permitted them to process learning in ways that were unique to each of them. At the same time, their choices demonstrated their strengths to me. My lesson plans over the past two years show that I never asked students to reflect on an activity and tell me why they liked it or what they had learned. By contrast, as part of the AMI research, I asked students to review and reflect on their learning in many ways. Each week, using a photo journal to facilitate the dialogue, I asked the students to review one of their choice activities. During the Choose 3 day, I photographed my students engaged in an activity, and then I mounted the photo on a page along with these questions:

- What are you doing?
- Do you want to do it again?
- Is it a good idea for school?

In addition, at the end of every week, I listed all the activities and asked students to circle in red the activities they didn't like and in green the activities that they liked. When clarification was needed, I asked students, through a Hmong translator, to explain why they didn't like an activity.

EVOLUTION OF MY WORK AND THINKING

The study of the brain and its relationship to learning in children was an early interest for me. When my neighbor was diagnosed as learning disabled in the 60's, I became interested in the work of William M. Cruickshank and Marianne Frostig, pioneers in education for brain damaged children. In their book, The Teacher of Brain-Injured Children, a collaboration between educators and specialists in medicine and psychology, Cruickshank and Frostig argued that brain damaged children could learn if teachers would modify instruction to fit the needs of each child and provide instruction which meshed with their unique point of brain entry. These ideas shared many common threads with the MI theory and the notion that all individuals process and compute information which accommodates their personal brain-based "computers."

My training in early childhood education provided me with another link to MI, particularly my interest in John Dewey's theory of learning by doing, a concept embraced by MI Theory. In his article "Multiple Approaches to Understanding," Gardner wrote about his theory that students have unique computer-like brains to process information in ways that fit individual ways of learning or knowing. He included "hands on" as one way of learning or knowing. Like Dewey, Gardner saw active participation as an efficient and useful element in learning.

In my project, I tried to identify the intelligences of my students and tried to have the students become aware of their own intelligences. Gardner's ideas regarding assessing intelligences also influenced the design of my project and my teaching. In his article, "Choice Points as Multiple Intelligences Enter the School," Gardner wrote that intelligences may be assessed through the lens of student choice. He explained,

> *...One approach is to attempt to assess intelligences in context by creating environments in which one can observe particular or groups of intelligences at work. Another is to feature student projects or exhibitions, where students have options of selecting the ways in which they can exhibit mastery of curricular materials.*

Gardner contends that the theory of multiple intelligences offers a variety of ways "into" a particular subject matter. He talks about an educational framework that recognizes and provides for differences among learners by offering a variety of ways to learn or "entry points" into a subject or theme -- aesthetic, narrative, logical/quantitative, hands on, and social. Through the Choose 3 activities, I tried to offer activities which reflected a variety of entry points.

The work of Renate Nummela Caine and Geoffrey Caine and Elsa Auerbach also contributed to the development of my teaching strategies. Caine and Caine's work support and complement multiple intelligence theory, particularly the importance of intrapersonal intelligence. Gardner contends that if he had to weigh all the intelligences, he would have to give the greatest weight to the intrapersonal intelligence. Caine and Caine believe that metacognition, or understanding the way one thinks and feels, is vital to the learning process. In Making Connections, they explain that "thinking about the way we think and feel and act . . . helps us to learn in much more depth because we begin to recognize and capitalize on personal strengths while improving or allowing for weaknesses. We are also better able to appreciate what is really important to us, and so access our own intrinsic motivation."

In addition, Caine and Caine address the need to connect old learning to new learning by making information come to life for the students. I used this theory in my teaching practice by having students create authentic stories connecting and talking about their life experiences.

The participatory model, suggested by Elsa Auerbach, further informed my teaching methods, augmenting the theories of Caine and Caine. In her book, Making Meaning Making Change, Auerbach explains that the essence of the participatory approach "is a simple one. People learn best when learning starts with what they already know, builds on their strengths, engages them in the learning process, and enables them to accomplish something they want to accomplish." In my classroom, the students provided me with direction. Their interests, concerns, and worries generated the themes and topics. They created authentic stories based on their life experiences.

In addition, Elsa Auerbach helped me to appreciate and observe the impact of cultural learning and experiences on the lives of my students. Her comments in my teacher journal were instrumental in responding to my research question about the impact of cultural learning and experience and MI activities. Auerbach, Caine and Caine, and Gardner all address the power of a community of learners and its effect on learning: -- creating an atmosphere for learning. They all state that students ideally should become the teachers. That goal became an essential part of my teaching practice.

Data Collection

Fifteen adults participated in my research project, and I used a combination of data collection tools.

- Surveys

  I used individual surveys to determine student learning strategies. The pre and post learning strategy survey offered students a three-point scale: "helped a lot, helped a little, not at all," to the effectiveness of classroom strategies: such as reading, writing, drawing, building, using equipment (blackboards, computers, books); and learning modes (working alone, with a partner, or in a group). Individual responses were combined into a class chart for class discussion.

- Computer and Book Logs

  Students kept copies of their own computer work as well as a list of books that they borrowed from class.

- Teacher Journal

  I recorded how students engaged in MI activities in my Teacher's Journal. I included student comments and other information regarding indicators of student engagement in MI activities.

- Dialogue/Photo Journals

  Through weekly dialogue journals, I posed questions to the students about their engagement with the activities using as the basis for my questions the following indicators of engagement: attendance, time on task, perseverance, signs of struggling, body language, taking a leadership role, and helping other students to complete activities.

  Students also responded weekly to questions about Choose 3 activities in which they had chosen to participate. A photo of the student engaged in an activity accompanied the questions, which included: What did you learn in this activity? and Which activity did you like? I also had students note new vocabulary words. The students were given the journals with my questions on Thursday of each week and returned them with responses and dialogue on the following Monday.

- Photograph Album

  I photographed students engaged in activities to record body language as an indicator of levels of student engagement with MI activities. These photographs were kept in a class album.

- Attendance Records

  I maintained attendance records as a way to assess student engagement.

- Lesson Plans

  I used the lesson plans from the preceding two years to compare my teaching practices' pre-MI and with MI.

In addition to the data collection methods noted above, I collected information about Hmong cultural beliefs and customs through a classroom aide and translator, Tia Yang. Feedback and support for the project came from two sources. A member of the International Institute staff visited my class throughout the year and provided me with feedback about my project. I also communicated by telephone and e-mail with Diane Paxton, my AMI project partner. We shared concerns, solved problems, coordinated surveys, discussed class activities, and exchanged logs.

FINDINGS

Finding 1: Student choices revealed their learning strategies and made it possible for limited literacy students to participate more actively.

My students came to the project already accepting of traditional activities. As time went by, they added both traditional and non-traditional activities to their repertoire of learning strategies. Through their responses to survey questions and their participation in class, it was clear that the students valued both kinds of learning strategies. However, they also demonstrated that they valued the non-traditional ones which were linked to the MI-based activities.

Each week I provided a set of activities relating to a topic or theme for the week from which my students were asked to complete any three. I designed the activities using MI theory as a framework. I observed changes in the activities my students chose. At first, the students chose less complex activities. In the beginning of my research project, I included the activity of writing the weekly vocabulary words in glitter or in colored sand as part of the weekly Choose 3 activity. At first, this activity was very popular. Everyone chose to do it. However, within four weeks of the Choose 3 activity, none of the students were selecting that activity. Instead, they were choosing more demanding activities, such as putting sentences in sequence, unscrambling words, and building objects out of Legos.

Findings

- Student choices revealed their learning strategies and made it possible for limited literacy students to participate more actively.
- Choice-based ESOL activities seemed to foster student assertiveness in school as well as outside of school.
- Students' academic progress was aided by MI-informed activities.
- Students increased their ability to reflect on their learning with repeated practice.
- Students had difficulty understanding MI Theory.
- Choice-based activities and a trusting learning environment led to students taking greater control in class.
- Through choice-based activities in a trusting learning environment, students expanded cultural norms.

Second, I could see a pattern emerge for each student. Each student selected with eagerness the same kind of activity over and over again. For example, after he became comfortable with Choose 3, Choua selected activities in which he could use his hands to make objects such as a wooden truck. Lor chose activities that involved logical math processes. These examples were consistent with learning activities they chose other days as well such as counting the number of students who were present. Although these students did not work exclusively in any one domain, they seemed to be drawn at first to a particular domain which reflected specific intelligences.

The choice activities provided an opportunity for students who could not communicate well orally or in writing to participate in the classroom learning. Mee was a good example of this kind of student. Mee knew few English words and could only write her name. She could not write the alphabet or numbers. But Mee was able to participate in the MI-based activities. She chose to find and cut out pictures from the National Geographic which demonstrated her understanding of the vocabulary for the week. For example, as I noted in my journal, Mee was looking for a picture of the word, "problem". She found a picture of a rider falling off of his horse. She cut out the picture and placed in the middle of her paper, wrote the word "problem" and with lifted eyes and an open mouth, said, "Oh, my G-d, problem"! Through her spatial center placement of the picture, choice of that particular photo in combination with her language, she showed her understanding and shared her excitement with the class. These activities made it possible for me to observe students with limited English speaking, reading, and writing skills. Through giving them choices, I gave these students the opportunity to express themselves in a way I had not done before.

In the beginning of the project, I conducted a pencil and paper survey with the students about learning strategies they considered helpful for learning English. I asked each student to indicate whether an item was helpful to his/her learning: "a little, a lot, or not at all." The items on the survey included traditional objects found in a classroom (blackboard, tape recorder, computer, books, markers), and non-traditional objects which are not usually part of an adult classroom (play dough, Legos, clay), objects found at home (a TV), traditional actions that might be associated with learning, (reading, writing, listening to the teacher, copying), and groupings that might aid learning (learning alone, with a friend, or in a group). When I compared the results of the two surveys, I noticed changes in the students responses to the objects and actions that they said helped them remember English. The following results were based on the total number of students present at the time of each survey. Not all students answered every question. I included a chart with all the data from the two surveys. I will only report a few of the more significant changes.

In the first survey, at the beginning of the project, 1% of the students reported that the blackboard, tape recorder and books helped a lot. In the final survey, 53% said that the blackboard helped a lot and 46% said that the tape recorder and books helped a lot. These results seem to indicate an increased interest in the traditional teaching tools, or an increased awareness of their usefulness to learning English.

Building with playdoh, a non-traditional teaching tool, was one item that stood out in the survey results. In the first survey, 44% said that play dough did not help them learn English, 44% said it did a little. In the final survey, 1% said not at all, but 93% said that playdoh helped a little. By the end of the project, more students felt that the blackboard, tape recorder and books, and even playdoh facilitated their learning. The students showed increased interest in traditional and non-traditional educational tools.

Students also demonstrated through the surveys that their preferences related to more traditional methods of learning English changed. In the first survey, 22% said listening helped a lot. This figure increased to 66% in the final survey. Similarly, the appreciation for reading as a way to learn English rose from 1% in the first survey to 27% in the final survey. The difference was even greater for writing. In the first survey, 1% said that writing helped a lot whereas in the final survey, 46% said so.

Perhaps the greatest change in attitude toward non-traditional learning strategies related to singing. By the end of the project, a third of the class said that singing helped them to remember English. Only 1% had responded this way on the first survey. Previously, the class told me over and over that singing was not in the tradition of the Hmong and that it was used only for ceremonies. Over time, I tried to emphasize the sound of the words in a sing-song way, and many of my students seemed to respond to this strategy. Perhaps that affected their attitude toward singing. Maybe my students' successful experiences with MI-based learning activities encouraged them to try new things -- even singing or chanting words, activities they had never seen as learning tools before.

In response to questions about working alone or in a group, by the end of the research project, one third of the class preferred to work alone to learn English, compared to only one student expressing that preference at the beginning of the project. I will talk more about group vs. individual learning in the section "Expanding cultural norms."

In conclusion, the students reaffirmed through the survey results that they valued nontraditional approaches along with the traditional ones. Experiencing diverse materials and learning strategies through the activities given as choices to them, the students seemed to have widened their learning strategies and began to employ a wider and more complex variety of strategies even including playdoh and singing.

It is interesting to note that as my students became more engaged through their own choices in non traditional activities, this led them to express paradoxical statements about MI-based activities. In the weekly evaluations, and at the end-of-the-year review, the students stated that although they liked the Choose 3 activities, they would like them to be more closely tied to literacy objectives. Over time, the students came to value MI-based activities, but they wanted to adapt these activities for their own literacy goals.

Survey Results of Student Preferences	PRE TEST Not at all	POST TEST Not at all	PRE TEST A Little	POST TEST A Little	PRE TEST A Lot	POST TEST A Lot
1. Work with a friend	0	27%	67%	60%	1%	13%
2. Work with a group	0	2%	1%	73%	67%	1%
3. Work alone	0	33%	56%	33%	1%	33%
4. Talking	1%	1%	66%	60%	33%	27%
5. Listening	1%	0	44%	33%	22%	66%
6. Writing	0	1%	56%	46%	22%	46%
7. Reading	0	1%	56%	53%	1%	27%
8. Singing	56%	2%	0	40%	1%	33%
9. Playdoh	44%	1%	44%	93%	1%	0
10. Legos	1%	2%	56%	73%	0	1%
11. Black-board	1%	0	67%	46%	1%	53%
12. Tape recorder	1%	1%	56%	53%	1%	46%
13. Books	1%	1%	56%	46%	1%	46%
14. Markers	0	1%	78%	60%	22%	2%
15. Computer	0	1%	56%	66%	22%	13%
16. Television	1%	1%	56%	66%	33%	1%

Finding 2: Choice-based ESOL activities seemed to foster student assertiveness in school as well as outside of school.

In school

Previously, I noted that the students' engagement and preferences about their learning strategies changed over the course of this research project. When I reviewed my Teacher's Log, I became aware that my students were also expressing their preferences *independent* of the choices I offered. I counted the number of times that my students verbally expressed a preference independent of my question. In the beginning of my Log, in one month, four students out of eighteen expressed a preference. Each of the four expressed a preference only once in that month. Midway thorough the project, I recorded that seven students had expressed preferences. Two students expressed three preferences in one month and the other four expressed two preferences in the month. Although not all the students expressed their preferences (there was variation among the students as to who spoke and the frequency of these exchanges), by the end of the project, more of the students expressed their preferences and more often as compared to the beginning of the project.

Additionally, in the beginning of the project, students only communicated to me about what they liked. By the middle of the project, students were communicating what they did not like. I was able to document these findings through student journals, student surveys, class comments, and observations. Students were asserting themselves. An African student, Jennifer, surprised me midway through the project when in response to my suggestion that we finish a matching activity the following day, she answered with great determination in her voice, "No, teacher. Today." I noted in my journal that Yer, Lor, and Choua agreed with her. They stayed after school and completed the activity.

On another occasion, I suggested to the class that we ask another class to come and help us clean up our community garden. To this suggestion, See answered that she didn't want any other student helping to clean up the garden because they would want a garden space. She said that she would bring her own family to clean up the garden.

At Thanksgiving, I gave the class a choice between cooking cranberries or sweet potatoes for our Thanksgiving Dinner. Yer did not make a choice between the two options I had offered, but stated a different and independent opinion. She said, "Teacher we cook, but we don't eat. Don't like the foods." The year before, Yer and many of the students in this class had cooked cranberries and sweet potatoes. Apparently, they were not a big hit.

Ger, a student from Laos, provided an example of student assertiveness in school. Ger hardly ever spoke in class. When I would ask him a question, his wife would speak for him. His wife told me that she spoke for him even at the doctor's. Near the end of the research project, Ger wrote the following in his journal in response to my question to him, "What do you like best in school?"

> *I like reading and write story in school because this word for me remember. I remember the new words very hot [hard] to talked for me. Sometime me people talked I don't understand. Sometime I understand, I cam [can't] talked.*

Ger was revealing something very personal about himself. It was one thing to share with your teacher your strengths, but another to write honestly about areas in which you are struggling.

Students not only expressed opinions as to what they liked and did not like, they also expressed ambivalent feelings about the choices that were given to them. In a few situations, they suggested adapting their choices. Lor said that she wanted to work with play dough, **but** wanted to do so in a way that helped her to learn English. She said," play dough and new words." Others in the class agreed. On another occasion, Pia said that she didn't like the class trip with adults and children to the Children's Museum, **but** she added that she might go another day when there were fewer people there. By the end of the project, students were expressing a range of opinions about activities that they liked, didn't like and somewhere in between. Students' assertiveness represented quite a change from their previous passive role.

Outside of school

Along with the student preferences, student voice seemed to emerge. By that I mean that students were able to communicate complex problems and to seek help in resolving their problems. This "student voice" was different than the "I like" and "I don't like" that my students had expressed. It was far more complex and personal and demonstrated learning strategies and levels of engagement that students used outside the classroom. As opposed to expressing a preference using the structured "I like and don't like," the students chose their own words, using rich vocabulary.

The following examples demonstrate how my students used their voices to solve problems outside of the classroom. I call the first example "The Ticket." Toua, a Hmong man, had been in my class for three years. He has good literacy skills and was 38 years old at the time. From my journal:

> *While parking in front of our community garden, Toua received a parking ticket even though there were no " No Parking" signs. When he showed me the ticket, at first I told him to pay it. He said that it wasn't fair. I suggested that we take photos of the poles which lacked signs and protest the ticket. While I was away that week, I received seven calls on my answering machine from Toua. I called him back and found out that he had a court appearance that week. He had called my co-worker for help. But he himself went over and took and developed photos from the garden. When he went to court, he watched (I was told that he really studied what was going to happen but didn't ask for help) what happened to other people. When called upon, he showed the photos to the judge demonstrating that there were no signs indicating No Parking. In that crowded courtroom filled with people, a setting that he had never experienced, he spoke to the judge. The judge dismissed the ticket.*

The situation was so important to Toua that he found his voice to express his outrage about the parking ticket. He was able to use his voice and learning strategies to solve real life problems outside of the classroom. When his trial came up, Toua needed to provide his own photos to document his case because the photos that I had taken were locked away in my house and I was on vacation. He took the photos which documented his case. He prepared his own defense, carefully observed the proceedings in the courthouse, and found the appropriate vocabulary and method of delivery to meet the needs of the courtroom. He used a wide variety of strategies with confidence and success.

The second example also involves another Hmong man named Pao. Pao was the most literate in my class. He was married and came to the class with his wife. He helped her in class and was always

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the first to answer questions. He kept a dictionary close at hand and was often translating words from Laotian to English. Pao was very quiet but pleasant and even-tempered. His comments always related to school and to the activities of the day.

Pao had attended a meeting with all of the gardeners and did not speak. The next day, I was surprised to be handed an angrily written letter. He expressed his frustration about his participation in our class garden. He was upset and seemed to be disappointed with me because he thought that I was ignoring the new students (he was new to the class) and not addressing their needs for a garden. It read:

> *I am Pao. I am very sorry for the meeting on the school at 5:00 p.m. for the garden program. I am thinking have problem because some people have gain(have) 2-3 way (gardens). This program help all peoples it not help old student.*
>
> *Help all people hardship, poverty, and poor people. Is it not new student don't have law in school. This model the Hmong people selfish talk to bad.*
>
> *are you teacher. You true mother and father for we student all person. (Student) doesn't come to school -- not thing give garden for them.*
>
> *Ought not too give but have many new student. divide point lots. New number garden. I think you mutual understanding.*

Pao was angry that a former student who graduated from our program and was now in another program still had a garden spot. Pao suggested that I divide the gardens from scratch. He was worried that he would not have a garden. Though perhaps difficult to understand, you can hear Pao's disappointment through his written words. This was the first time that Pao had expressed such strong thoughts and provided a strategy to resolve problems.

Lor provides the final example for the use of voice in the real world. I wrote this in my journal.

> *Observing the children in the children's classroom, Lor noticed enlarged playing cards. She told me, "teacher, I don't like. Children like. Good at cards. Get big, don't listen go to casino." She then related a similar story involving her kindergarten son. When she found out a few weeks ago that he was using playing cards in school, she told him to refuse. When the kindergarten teacher called her to inquire, she told the teacher about her fears about the casino. After hearing her concerns, I asked Lor if we should discuss it with Teacher Carol, the teacher for her children at our school. To my surprise when Teacher Carol came into the room, Lor took over the discussion. Lor was clear and direct in front of all the other parents in the classroom about her concerns for her child.*

Each of these three people seemed to find their "voice" over the course of the project. Their voices appeared to grow in strength. By the end of the project, other students were sharing their feelings of depression, their disappointment in their own literacy compared with that of their children, their concerns for the safety of their parents in Laos. The women were even commenting on the laziness of their husbands who were attending the class. These statements were in contrast to their reservedness-- indeed reluctance even to express preference -- in the beginning of the project and during prior years. In addition, as I demonstrated with the last three examples, at least three students were able to connect using their voice to solving problems outside of the school setting.

These students had been in my classroom for three years. Perhaps they had previously asserted themselves outside of school and I was not aware of it. But this year, after participating in the choice activities, students demonstrated to me how they had used their voice outside of school. I felt that I could see a link between the practice with choice activities in school and a developing assertiveness in school along with an emerging assertiveness outside of school.

Divergent case. Many students demonstrated ambivalence to choice.
It is interesting to note that Tia, my translator, reported that the Hmong students enjoyed the choices but felt anxious about making the choices. They wanted to finish **all** the choices on the Choose 3 list. She said that she thought that they didn't want to appear lazy, a characteristic frowned upon in the Hmong culture. The ambivalence seemed to come from the conflict of trying to finish as many projects as possible and not appearing lazy and at the same time wanting to linger and enjoy the activities in which they were deeply engaged. The choice activities gave the students opportunities to work with a wide range of materials in an educational setting. This teaching method was different from the traditional model that my students had experienced in the Thai refugee camp and in their first school in the United States.

Some students expressed ambivalence about Choose 3 activities because, as Tia, my translator, explained to me, the students said that they wanted more words connected to the Choose 3 activities. Lor explained with Tia translating, "I remember words when we do things, but I like to do more things with writing with new words." Even though my students did show ambivalence to the "new ways" (Choose 3) of learning, they were engaged and were willing to do them.

Finding 3: Students' academic progress was aided by MI-informed activities.

As students made choices about how they would learn information, I was able to observe academic growth in the students. The students developed competency on the computer, in reading, writing and speaking, as well as in their drawings, and in problem solving. Mee, non-verbal in English at the beginning of the class, was now using English when selling her homemade hand sewn objects every morning. Lor and Yer, both with limited reading skills at the beginning of the project, and who had been in the class two years prior to this research project without any real literacy gains, were able to read Level One of the New Reader Press by the end of the project. I did not teach these areas, but rather the students learned them of their own initiative. I facilitated their learning by providing them with opportunities to learn about their own intelligences. I provided a structure to help them reflect on their learning strategies and progress. When I observed their intelligences, I noted it to the students and to the class. My students seemed to discover their strengths and use them to pave a way from problem to solution, later transferring one solution to another problem even if they were not aware of or could not name the strategies that they were using. I supported their efforts but did not show them the paths, for they were truly different for each student.

Lor is an example of academic growth aided by an MI based curriculum. She seemed to come to know her own intelligences and applied them to learning. Lor came to school pregnant. She sat at the back of the room near her husband. At the beginning of the project, she spoke rarely. I noted in my journal then that she offered occasional comments about what she wanted in school. She told me that she wanted to write, do math, and write on the blackboard every day. She asked if she could cut the magazines -- demonstrating to me that she was not used to using them in this way. On her initial survey of what helped her learn English, she answered "a little" to almost every suggestion. To writing and working in a group, she put "a lot." To singing, she indicated "not at all". She seemed to prefer a more traditional classroom. I noted in my journal that she had good letter-sound association but needed help in reading, writing and counting money. At the beginning of the AMI project, Lor had been in my class for one year.

Half way into the project, when we began to use the Choose 3 activities and authentic stories, Lor began to provide ideas for the stories. She began to attempt using the computer function of print on her own. She demonstrated an interest and ability with numbers and sequencing. Lor seemed happy to do the Choose 3 activities and did a number of different projects, trying to finish as many as possible. Like many of the other students, Lor showed ambivalence to some of the Choose 3 activities. For example, when I suggested that she draw, she said that she was not good at drawing, but drew anyway and continued to draw voluntarily on many occasions.

Lor became more verbal during Mondays (the days that we wrote a class story), offering more and more of the story for the week. She provided the entire text for a class story retelling a complicated Hmong folktale. She also worked harder during the Choose 3 days, rushing to get the materials. She was the first to jump up and grab the papers for Choose 3. I commented in my journal on her intensity completing a word find activity on a Choose 3 day. Later, in the computer lab, she was able to save, print and exit. By the end of the research project, Lor improved her reading and writing ability, although writing was still difficult. In computers, she mastered save, change the font, and locate a file on the disk. On her survey at the end of the project on the subject of "How do you remember English," Lor had changed her responses. Working in a group changed from a lot to a little, listening changed from a little to a lot, blackboard changed from a little to a lot, T.V. changed from a little to a lot, and singing changed from not a all to a little. Her responses seemed to indicate that she had changed her earlier attitudes about a traditional classroom and now valued some nontraditional activities, as well. By the end of the eighteen month research project, Lor could read at a more advanced level, often providing the entire text for a class story and helping to support other students in their reading, writing, and computer use.

I can't say what exactly accounted for Lor's progress or the change in her attitude toward the MI based activities, but I believe the introduction of MI based activities helped to support her learning. By the end of the research period, she seemed able to call up her strategies to solve problems. She was able to make decisions about Choose 3 activities. She was engaged for longer periods of time and volunteered her skills to help others read, write, and use the computer. She became aware of her own strengths and her own paths to learning. She talked about wanting more math and was vocal and supportive about the activities in which she showed strength. As time went on, I responded to Lor's academic progress and began to expect more of her. Perhaps she internalized my expectations and was able to achieve more in school. Increased teacher expectations may have been a factor in Lor's literacy development. By the end of the research project, it seemed that she was better able to tap into herself and solve new school-based problems.

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Finding 4: Students increased their ability to reflect on their learning with repeated practice.

Prior to this project, my students had difficulty assessing their own class-related work. This is what I wrote in my log, six months before the project began.

> *May 1996, at the end of the school year, I asked my class to help me create their end-of- the-year student folder by selecting 3 samples of their work. There was silence. Not unexpected. My students have been more than reluctant to demonstrate preferences. They said that it was the teacher's job. I should choose. This was a typical answer, and one that I had come to expect. This day I didn't take "no", and I had each student open up their folders. I stood watch as each reluctantly took out 3 papers. "Any 3", I kept saying. That was the beginning of developing my students' metacognitive awareness.*

I repeated this assessment activity at the end of the AMI project. Comparing these two assessment activities documents the growth in my students' ability to make choices about their work and not relying on the teacher so much. At the end of the project, I again asked the students to select three of their work papers for their permanent file. I left the room for a moment leaving a co-teacher who is fluent in Hmong in my place. When I returned, the students had completed the task. When I asked the Hmong teacher if there was any problem or confusion, she said that the students didn't ask any questions, but that they went directly about the task of selecting papers for their folders. From the perspective of a teacher, the speed and ease in completing the task of selecting papers for their permanent work folder demonstrated to me their growth in metacognition. By the end of the AMI Project, the students showed growth in their ability to reflect on their learning.

Finally, each week, I asked the students to review one of their choice activities, using a photo journal to facilitate the dialogue. During the Choose 3 day, I photographed my students engaged in an activity, and then I mounted the photo on a page with these questions: What are they doing? Do they want to do it again? and Is it a good idea for school? In addition, at the end of every week, I listed all the week's activities and asked students to circle in red the activities they didn't like and in green the activities that they liked. When clarification was needed, I asked students, through a Hmong translator, to explain why they didn't like an activity. In the beginning of the project, I noticed that the students circled that they liked everything. However with time and practice, some of the students became more discriminating and indicated by circling in red activities that they did not like. For example, Yer circled that she did not like going to the children's museum.

Despite any cultural or other obstacles they may have had, by the end of the year, my students had learned to reflect on their own learning. Yer is a great example. The year prior to the AMI project Yer wrote in her journal that she didn't learn in school. At the end of this year, when I asked Yer what she would do about school next year because she had made so much progress, she answered, "I think next year I come back to school. I think not hard for me. I want to go talk to you." Yer was telling me that she had reviewed her own progress in school this year and had decided that she had learned so much this year that she could say that school was not hard. In addition, she wanted to discuss her school related options for next year and wanted my input. Yer was typical of the other students in the class who by the end of the project seemed able to think about their learning and to share this with me.

I think that it was important that my students could anticipate their weekly reflections on their learning. Asking students to reflect on their learning became a pattern in my teaching everyday, not something I reserved for the end of the year, as I had done in years past. The routine nature of the reflection seemed to help them prepare for the activity, and the repetition seemed to help them become better at reflection. As the classes went on, they were able to respond more quickly to reflective questions and were not confused by the questions as they had been in the beginning. However, it was not clear whether my students actually valued these reflection activities.

The Hmong culture also had an impact on self-reflection – one I had not understood when I first began asking my students to make choices and reflect on their learning. Tia explained that "even if there's progress or they can do something better, they're very humble, in a way saying we're not learning anything." I noted in my journal that when I told Chong that he was smart at drawing, he quickly said, "No good, teacher," but with a smile on his face and a twinkle in his eye. The Hmong tradition of not acknowledging one's own strengths thus may have impacted my students' readiness to reflect on their strengths.

Finding 5: Students had difficulty understanding MI Theory.

After reviewing my journal, it was clear that in spite of many introductory activities with MI Theory, most of my students had a very limited understanding of the theory. Some were able to understand more fully, others to a lesser extent.

In the beginning of the research project, I tried to explain MI theory to the class by using a picture of a brain and locating the eight intelligences in words and in pictures. In another activity, students were asked to identify their own intelligences through pictures, and I attempted to make and share an MI profile with each student. This was not a useful activity. The students had difficulty even with the aid of a Hmong translator. I am not certain what they were able to learn about MI as they appeared confused and didn't ask any questions.

However, I was surprised to see that my students, who have limited literacy in their own language, seemed to have some limited awareness of their own talents and those of other people around them. In the beginning of the project, a Hmong student wrote in her journal in response to my question, *"Who do you know is the best at sewing?"* She wrote:

> *"I don't know anybody I know. Mrs. ------- and -------- and old Hmong lady and Mrs.-------. She was able to identify people from her community who demonstrated this strength. A Hmong woman wrote in her journal. "What would like to be if you could be anyone. I don't know to be anybody. I want to be myself because I am not good at anything as mother and woman. I hold the reins of the family. I give the family support they want. I am responsible for keeping the family together."*

My students also demonstrated that they could identify each other's strengths. A Chinese female student tells a Hmong female student that she can't remember her name *"but the she knew the she could sew doll clothes very well."*

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Even though my students could talk about their own and other's strengths, they had difficulty with the concept of "smart". While looking for pictures to profile a student's own intelligences, one Hmong woman cut out a family in a car with groceries. She attached no other explanation to the picture.

Finding 6: Choice and a trusting environment led to students taking greater control in the classroom.

Trust was developed in many ways in the classroom and was important to getting students to take risks and do the MI based activities. Allowing students to make choices about their learning helped to develop a sense of trust in the classroom.

Looking back on my research project, I think that unknowingly I started to establish a sense of trust in the early days of the project by taking the suggestion of one of my students and providing two separate classrooms, one for adults and one for children.

> *February 1997 In the beginning of the project I asked the class how we could make our school better. Based on the suggestion of a student, See, I asked the class if they would like separate rooms for the children and for the adults. I polled each student. Each said that they would. (This was a departure from the usual as the children have been with the parents for the past 7 years in the program. And I would have to struggle to find a second room). I then asked the students what we would do if a child was crying. Lor demonstrated her commitment to two classrooms by suggesting that mothers or people with children take turns helping Teacher Carol with the children. By this suggestion, she was volunteering to help with the children and be willing to forgo classroom instruction so that we could have two separate classrooms. We have formed two separate classrooms, one for children and one for adults. This example demonstrated how I was able to trust in my students' preference and the reciprocal trust that followed from this experience.*

The students demonstrated their growing trust in the class by their public participation in using the blackboard. At the beginning of the research project, the students were reluctant to volunteer to write their dictations on the blackboard. By the end of the research project, I didn't need to call on students to come to the blackboard. When I asked who would write on the blackboard, everyone participated. Choua often ran to the blackboard. Students came to the blackboard even though they were uncertain about their answers and had written them incorrectly. Students felt safe enough in the class to chance writing incorrect answers on the blackboard for everyone to see.

The garden project was another important factor in developing student trust. We received a grant to develop three community gardens with the students. How we spent the $8600 was a decision that was made by the students in the class. It was a re-creation of one aspect of their lives in Laos. The garden was more than a hobby to my students. My support of their gardening demonstrated that I respected their culture and helped them provide food for their families.

In addition, within the context of the class day, trust was developed as students' problems and interests became the themes that we explored, wrote about, and read about. For example, as I noted in my Teacher's Journal, I gave the students a choice of four hand drawn pictures and asked them to choose one for the class to write about together. The pictures depicted four problems that we had experienced the day before in school: women complaining that men wanted to go too fast on the spelling dictation; the students' inability to learn how to use a combination lock (part of our garden project); the presence of children in the classroom; and problems with the division of the plots in the garden. We talked about each of these problems but the class decided to write about the garden. The most passionate story came from the student who was protesting his garden plot. He wrote, "I have a big family. I want to plant onion, cilantro, eggplant, corn for the baby to eat. But some people aren't to have happy with me. I want big garden." The students were engaged in the theme of the story because the story was based on their interests. Since they created the text for the story, they were able to read it as well.

By the end of the project, the students felt comfortable enough that they planned their own end-of-year ceremony, which was a first for them. This was also the very first time that the students asked me for class time so that they could plan a party. They spoke in Hmong so that I would not understand. Ger emerged as the leader. He asked me for 10 minutes of time each day for a week which he used to meet with the men to plan for the food, gifts, and speeches. He also asked me to invite the president of the bank which gave us the grant. At the ceremony, the students got up and spoke their heartfelt thanks to me and my co-teacher. The students spoke about how much English they had learned over the year, how grateful they were for the garden, and for the personal support given to each student. It was really a moving day.

Although trust was not directly germane to MI based learning, it supported it. A trusting community allowed the students to take chances in their learning and to try new things. MI based activities were new to my students, and without that trust, they may not have been able to branch out in the new directions I was asking of them. Over the year, I have attended baby naming ceremonies, funerals, New Year's parties, tried to learn the Hmong language, eat Hmong food, and decorated the room with Hmong wall hangings -- all resulting in a close community. Trust was also nourished by responding to student strengths, by affirming the preferences of the class, and by respecting the many cultures of the class. All this contributed to the emergence of the student voice.

Finding 7: Through choice-based activities in a trusting learning environment, students expanded cultural norms.

The following are other ways that students expanded their cultural norms through choice-based activities in a trusting learning environment.

Finding 7

a. Students work more independently and less in a group

b. Students show increased value of nontraditional classroom

c. Students occasionally acted contrary to culturally defined gender roles in the classroom

d. Students prefer a classroom without their children

7a. Students work more independently and less in a group

Over the course of this project, I observed that the students seemed less bound to their cultural norms. The cultural norm of group learning was one area of change. The Hmong people value working within the framework of a group. Individual achievement is downplayed, the group accomplishments are paramount. Over the course of the project, I observed in class and noted in my Teacher's Log that group learning decreased. By group learning, I am referring to whole group learning, not learning in small groups. Whereas students initially were reluctant to express individual preferences in the Choose 3 activities, at the end of the project, I observed more individual problem-solving.

The results of a learning survey which I mentioned earlier, conducted in the beginning of the project and repeated at the end of the project,supported this observation. As I reported earlier in a pencil and paper survey, I asked each student to indicate whether an item, an action, or a social grouping was helpful to their learning -- a lot, a little, or not at all. In the beginning of the project, all the students indicated that they remembered English a lot when they worked in a group. The next day I reviewed the survey results with the class and asked them about working in a group. Yer explained that she liked doing things with a group because, " I am not so shy." Planning to write a story from a photo of a girl leaning wistfully on her hand, Choua stated that he was relieved that we were writing the story as a group and not alone.

At the end of the project, I repeated the same survey. The results showed that the students had changed their preferences for how they liked to work for the purpose of learning English. Instead of all agreeing about working in a group, three said working in a group didn't help them remember English at all, and the majority said that working in a group helped a little. Only one student said that working in a group helped her a lot.

To the question of working alone, in the survey at the beginning of the year, one student said that working alone helped a lot. The rest said that working alone helped a little. At the end of the project, however, the class was evenly divided as to whether working alone helped a lot, a little, or not at all. In sum, at the end of the year, at least one third of the class valued working alone to learn English, compared to one student expressing that preference at the beginning.

When we discussed the survey at the end of the project, Ger became very vocal (in Hmong) about why the students liked to work alone. Tia translated the Hmong, "They would rather work by themselves because there may be conflicts working together. So they work alone and get help from others when needed."

Individual rather than group needs seemed to emerge, as the project progressed, especially around the subject of our community garden. I am not certain that the same situation could or did happen in Laos. However, it was unusual to see this attitude develop as I had not seen it before. In my log, I noted that Lor asked the children's teacher to grow hot peppers for her. She did not ask the teacher to also grow hot peppers for the others in the class, and I don't think that she told anyone else about her request. In this case, Lor was acting as an individual and not as a member of the group -- a departure from the Hmong tradition in which the group needs were paramount.

The on-going class discussion about garden plots was another example of individual and group needs -- regardless of cultural traditions, when it came to the garden, each man was for himself. It is interesting to note that we, as a class, have had garden plots for the past four years. The subject of land and who could have more or less was never brought up for discussion, but the discussion about the garden allocations was different now. As the class prepared to work in the garden, I received letters of complaint about the size and number of garden plots from two students, Koua and Ger. When I suggested that students with small or no families exchange garden plots with those with large families, I was met with great resistance and stony silence. One student, Mee, grew so angry with my request that she called another student and scolded her for bringing up the subject. Despite the fact that most of the members of my class were related and belonged to the same clan, rising interest in personal needs in the garden often overcame concerns for the group.

7b. Students show increased value of nontraditional classroom.

In the areas of learning strategies, as I have previously noted, I asked the class on the survey to indicate what helped them to remember English a lot, a little, or not at all. By the end of the project, the students reaffirmed through the survey results that they valued non-traditional approaches along with more traditional ones. Tia, my Hmong translator, reported after an after-school study session that the Hmong women said that they felt that they were learning more this year and wanted a longer class. They also said that I was doing some new things that seemed to help them learn. The students reaffirmed these sentiments as we discussed the "How I Remember English" survey.

In a follow-up discussion after the final survey, I asked the class the value of nontraditional tools (playdoh, legos) in remembering English. The students were able to quickly refer to products they had created months ago with the playdoh and legos: i.e. a monster with big eyes, big ears, and a big mouth. Most of these students had only experienced traditional teaching tools in their educational setting in Laos. The nontraditional tools seemed to make an impression on them.

Regarding education, the type of education that the Hmong students were accustomed to differed greatly from the approach I took during the project. In Frames of Mind (1993), Howard Gardner described schooling in nonliterate societies as oral linguistic instruction taught by skilled elders or relatives on site.[11] Helaine W. Marshall in the 1998 TESOL workshop "Reaching ESL Students with Limited Formal Education" also talked about the educational profile of nonliterate people. She stated that they preferred to work in a group, to build a strong relationship with the teacher, to learn what is immediately relevant, to use oral transmission, and to have repeated practice.[12] My students' descriptions of the education that the men received in Laos closely matched Gardner's and Marshall's descriptions. The men were taught in a group in the kitchen of a house through a totally oral approach.

7c. Students occasionally acted contrary to culturally defined gender roles in the classroom. Lor, Yer, and Blia provided examples of how the culturally defined roles of men and women became more elastic by the end of the project. The Hmong people have specific roles for the men and women. The women cook and care for the children while the men build houses and hunt. Both genders help with the farming. I observed that Lor and Yer frequently complained to me about their husbands, even though their husbands were attending the same class. From my log, where I recorded Lor's words, "He is lazy. He sits and watches TV. I work. I have many children." Both Lor and Yer seemed to be questioning the traditional roles of men and women.

The Choose 3 activities provided another example of the changes in these norms. While most Hmong women did the cooking, Blia, a man, chose to cook in the kitchen with two women. In another example, I had invited the class to build houses out of straws and sticks. Lor said that "was a man's job". Yet when I asked her if she wanted to try to build one, she seemed happy to do so and was joined by all the other women. In the end, the women made three houses. Of course, some cultural practices did not change. For example the physical separation of men and women is a common practice, and in my class men sat together at the back of the room and women sat together at the front.

7d. Students prefer a classroom without their children.
It was typical for Hmong people to keep their children within eyesight until the age of four. Yet in the beginning of the project, as I commented earlier, See asked for a separate classroom for children. I noted in my journal that Lor also clearly separated herself from the tradition of having children in the classroom when, in the middle of the project, she said that she wanted her daughter in the children's class even though her daughter, an infant, cried most of the time. Lor added that she didn't care if her child cried for two or three days. Responding to a picture of herself holding her daughter in her photo journal, Lor wrote "I am holding my baby." Responding to the question "Was this a good idea for school?" she wrote, " I like the baby, little go to the teacher Carol class - keep the children out." Pia responded in a similar way in her photo journal to a photo of her holding her daughter. She wrote, "I am sitting with the baby." In answer to, " Is this a good idea for school?" she wrote, "No, I want to study." Clearly, Pia saw that her child was interfering with her studying.

I also noted in my journal that Chou closed the door during the class to keep out the children. Contrary to Hmong tradition, the Hmong students no longer wanted their children to be in the same classroom with them.

CONCLUSIONS

Looking back on my original log entry at the very beginning of the project, I was amazed at the impact of MI theory on my teaching practice and on my students' learning:

> *Dec. 1996: I don't know a lot about my students. I can only observe their reading and writing. It is difficult to fit curriculum to student needs. It is difficult to assess low level learners. They have limited ability, no reading ability, limited oral vocab. They have low expectations, limited appreciation of their abilities. They are aware of the gap between themselves and their children. They are aware of what they do not know. They hold tightly to their culture and express disappointment with its shortcomings.*

My original thoughts contrasted sharply with my findings and conclusions at the end of the project. With MI based approaches, I no longer found it difficult to tailor the curriculum to student needs -- in a way, they chose it for themselves! The students were able to express their own needs which I included in the curriculum. This created a broader curriculum which fit the needs and strengths of the students. The students were willing to accept a broad curriculum change. It was no longer difficult to assess low level learners because their choices, input, and self-reflection helped me assess them. They no longer held tightly to limiting cultural norms and were more accepting of a nontraditional classroom. MI based theory had a significant impact on our community of learners and will continue to be an important factor in our future.

Reviewing my lesson plans from the past two years, I noticed that I offered few choices to my students prior to the AMI project. In preparation for an Interim Report for the AMI project, I started to code my log for verbal student preference entries that demonstrated when I offered choices to my students, for example, choosing from several photos to compose a group story, planning the number of times we went to the computer in one week, or deciding whether vocabulary meaning should be demonstrated through words, drawing, acting, or playdoh. In the beginning months of the project, I offered 5-7 choices on average during the course of each month. However, in the later part of the research project, I offered 11-13 choices per month. I had doubled the number of times that I offered choice to my class. Thus, it became obvious to me that one effect of MI theory on my teaching was offering more choices to my students.

Finally, informed by MI theory, I no longer lectured or struggled to impart facts to students, and as a result, my teaching was easier. I noted in my journal that I felt relaxed when my students were engaged in their own process of learning and solving problems. I saw them learning and exploring ideas. If I over-planned or rushed my students and did not give them time to solve their own problems at their own pace, I felt their frustration and knew that this was not good teaching. By the end of the project, I noted in my journal that I was more comfortable when my students were busy and engaged, and I served as facilitator and observer. Class worked best when I attempted to set the stage for their learning. I no longer asked what would I teach, but what would the students learn and how would they learn it. In my journal I noted, "The path from the brain to learning had to be self paved but community supported." Implementing MI theory, seems to have triggered changes in my students and in me and my teaching practice.

A NEW QUESTION

I learned a lot about my students through the AMI project, and believe the MI based approaches were a success, but I believe I can take MI even farther in next year's class. My MI research left me wondering what would have happened if I had explored how these students thought about their own thinking. I didn't ask or try to develop strategies to explore how the Hmong thought about intelligence. Who did they think was smart? Was intelligence located in the brain? Did they think that it could be changed or affected by learning strategies? Did they think that it was inherited and you get what you were born with? These beliefs could have affected their appreciation of MI Theory and their awareness of their own intelligence. There has been some research to show that becoming aware of how you think can affect academic performance. My students were able to think about their learning. What would happen if they were able to think about their thinking? What would have happened differently in this study if I had started developing my students ability to think about their thinking and then introduced MI Theory? These are questions I will continue to explore as I move forward with next year's class.

Bonnie Fortini

ABSTRACT

Bonnie Fortini's research centers on her students' math anxiety and possible ways in which MI-based applications could alleviate it. She uses a visual representation of math anxiety as well as a survey to help her students analyze and talk about their own experience. She also infuses her teaching with MI self-assessments and related discussions about MI theory. Her hypothesis is that knowledge about their own intelligence strengths will enable her students to develop better learning strategies which, in turn, will combat math anxiety.

To a lesser extent, Bonnie designs MI-based lessons. In this she feels constrained by her students' traditional expectations of numbers and workbooks and not much talk in a math class. She also runs up against her own teaching preferences and intelligence strengths. Nevertheless, the few MI-based lessons do draw positive comments from several students.

Bonnie finds that "The introduction of MI theory and the survey-generated illustration of our unique profiles of intelligences seemed to facilitate conversation among students about issues of education, even the more sensitive issues like learning difficulties and math anxiety. Perhaps the opportunity to recognize that each person is a complex collection of strengths and weaknesses created a comfort level that allowed students to open up about problem areas." In the end, Bonnie concludes that "Although students' discussions of MI, their own strengths, and math anxiety do not necessarily imply that MI helped alleviate math anxiety, they did provide the first step in that direction. MI showed itself to be an excellent point of departure for thinking about math anxiety and how students can work to overcome it."

Bonnie Fortini

RESEARCH CONTEXT

> *What kind of MI-informed instruction and assessment can be developed that will help adult learners deal with math anxiety, so they may reach their stated goals?*

I teach in a small, rural, adult education program in "Downeast" Machias, Maine. Machias, is the county seat of Washington County, one of the three poorest counties in the nation. Our economy is divided between service industry and seasonal agricultural employment. Plagued by chronic unemployment (currently at 11%) and the lack of an industrial base, the county historically has a median income below the state average, welfare needs at or above the state average, and few community resources. To get by in this subsistence economy, individuals rely on practical skills, hard work, and wit, which the people of Washington County have in abundance.

Our program is housed in the local high school and at community-based sites, including the county jail, a sheltered workshop, and in students' homes. With a county functional illiteracy rate of roughly 24-30%, we want to make education accessible to all our adult citizens. Recent welfare reform has resulted in an increase in program enrollment, as recipients take courses in order to receive benefits, and, for some, to gain employment subsequently.

Most students are over 25-years-old and say they have forgotten or never learned basic academic skills. They have returned to formal education to "fill in the gaps" that impede their progress towards employment or post-secondary education, or that limit their ability to support their children's learning. A significant part of my class population is pursuing GED or high school diploma credentials. A number of them are recent K-12 system dropouts, some as young as 16. The last segment of the program is composed of ESL students, typically "Navy wives" who are stationed locally.

Many of these students attend our Math Lab to learn or improve basic math skills. I focused my research activities on the Math Lab students, who are mostly women. The Math Lab meets for a weekly, three-hour session in the evening, after typically long, tiring days for my students. In addition to this limited time together, and meeting at a less than ideal time of the day, my students and I are also facing a content area to which most people bring some strong negative preconceptions, often resulting in a lack of confidence and "math anxiety."

Most of the Math Lab students see themselves as never really having understood math, and consequently they have low expectations for their own success. Many students were "tracked" in applied math courses and feel inadequate to tackle abstract math. Some of my students are hoping to go on to the university as non-traditional students but are very anxious about the math requirements. Many of the men who come to the class work in the trades and use math for their jobs, but are seeking more formal and advanced skills to secure their employability. Most of my students come to classes between seasonal work times (e.g., blueberry raking, wreath making, fish packing) and often are not able to maintain consistent attendance. A common denominator among the vast majority of these students is their lack of confidence that they can succeed. Some are struggling to find the confidence even to try.

RESEARCH QUESTION

What kind of MI-informed instruction and assessment can be developed that will help adult learners deal with math anxiety, so they may reach their stated goals?

The subject of math anxiety has been of particular interest to me ever since I personally experienced it. I was rescued by an experimental approach to math that I now realize served to reduce stress and fear and, indeed, turned me into a lover of things mathematical. Over the past eight years I have recognized that same fear of math and expectation of failure among my students. My research question grew out of these observations and my experiences with students who struggle with math. I wondered how multiple intelligences theory might support my ongoing efforts to help my students overcome "math anxiety" and its sometimes debilitating effects.

I had my students describe what math anxiety felt like to them, hoping to help them make a more explicit connection to the phenomenon by having them articulate it. About Stress (1995) describes anxiety as the result of tension caused by stress, brought about by pressure, possibly from outside forces, and manifested as physical, mental, and/or emotional problems. These were the three major categories of math anxiety "symptoms" identified by my students and that they further elaborated with a list of nineteen modifiers (see Appendix 1). I hoped to use MI theory to address students' math anxiety by somehow acknowledging and tapping their areas of strength among the eight intelligences.

EVOLUTION OF MY WORK AND THINKING

I took advantage of the opportunity the AMI Project provided to study MI Theory more intensely than I could have otherwise. In Frames of Mind (Gardner, 1983, 1993a) I uncovered new ideas and possibilities, and I felt that in some respects it validated my own understanding of my students' intelligence and learning. Hearing and reading about K-12 applications of MI theory was also helpful in developing my understanding of MI theory and how I might use it in my setting.

At the start of the AMI Project, I was already incorporating learning styles, or learning modality strategies. This involves the identification of students' learning preferences (e.g., auditory, visual, or kinesthetic learner; individual or group learner), and tailoring instructional strategies and suggested study practices in a manner that uses students' preferred modalities to best advantage.

My understanding of learning styles was enhanced over the course of the project (Wilson, 1991). I learned more about the Gregorc approach and also came to a better understanding of how the work on personality styles (e.g., Carl Jung, Myers-Briggs) is connected to learning, specifically by describing ways people interact with others and how they react to information. Silver, Strong, and Perini's (1997, Sept.) synthesis of learning styles/personality types and MI theory helped concretize how these two sets of ideas can work together to describe and support the different ways people learn.

Caine and Caine's (1994), Making Connections, helped clarify the concept of "math anxiety" for me. In their discussion of the physiological effect of stress on learning they observed that individuals under stress cannot carry out learning activities and "lose intrinsic motivation" as they "downshift" into a self-protective complacent inactivity (p.76). That seemed to describe the experiences of at least some of my students. It was also something that I hoped MI theory could help me alter.

Over the course of the project, meeting and sharing with project directors, advisors, and fellow teacher researchers helped me develop my MI-informed thinking and teaching practice. MI resources also informed my work. For example, In "How Teachers Interpret MI Theory," Linda Campbell (1997, September) describes representative forms of MI-informed practices in use, including lesson design, interdisciplinary curriculum, student projects, and assessment. These "forms" helped shape different types of MI practices I considered and implemented, such as Math Anxiety and MI survey activities, two hands-on lessons using Skittles™ and M&M's ™ (Cross reference Vol. 1, Lessons), and providing different ways to represent their learning (e.g., drawings, graphs).

Gardner cautions that MI is not an *educational* theory and is therefore not prescriptive. As a theory of intelligence, MI can lead to any number of applications (Checkley,1997, September). This has been an important distinction for me in my use and understanding of MI theory. Gardner emphasizes that MI is essentially an intensive, rigorous observation of how the brain works to solve problems or make products. This notion made MI available to me as a philosophical foundation, rather than primarily the instructional tool I had envisioned and, to some extent, utilized.

IMPLEMENTING MI THEORY

Early in the project I developed a project map (Appendix 2), a representation of the common experiences shared by those who have math anxiety and limited math skills. I designed this map as a talking point, an "anchor" that encouraged students to look at their own experiences with math anxiety, past and present, and to begin to consider potential steps toward overcoming this barrier to their math-related goals. I explained that I believed that if they faced their anxiety and strengthened their abilities to relax and learn, my students would be able to attain their goals. I also felt it necessary to introduce and provide a rationale for the degree of conversation and communication thatthe application of Mitheory would bring to the classroom. Most students would not be expecting so much talk in a math lab, and very possibly would not be comfortable with it. The project map activity helped introduce and encourage class talk in the context of a very relevant topic to my students' learning goal, math anxiety.

Working from the contention that students could reduce anxiety with the appropriate strategies, MI theory presented itself as one possible tool toward that end. Having read Armstrong's (1993), Seven Kinds of Smart, I decided to develop a paper/pencil survey similar to Armstrong's (1993) to help students consider their areas of strength (Appendix 4).

As preparation for the data collection and analysis that would follow, I facilitated two MI-informed math activities. Students sorted and counted M&Ms™ and Skittles™ candies using fractions, decimals, percents, and means, learning math skills in a highly accessible (and tasty!) way. The first semester students then completed the MI survey. Following analyses of their data, the students brainstormed math "stress busters" based on the eight intelligences.

At the start of the second semester, I used the first semester's project data, materials (e.g., project map), and analysis to introduce multiple intelligences to new students and as a review for returning students. This review included a presentation and discussion of first semester findings about math anxiety and ways to overcome it.

Several factors, including increased student enrollment, limited my MI implementation in the second semester, which I had planned as a repeat of the first semester research activities. MI implementation was limited to introduction of the theory, as described above and students' participation in an audio MI self-assessment. By semester three, I was unable to implement any explicit MI-informed practices beyond providing the MI self-assessment and discussing the results in terms of math learning strategies.

METHODS

First Semester

For the first semester of this research project I worked with my Math Lab class of 19 students: 90% women, 31.5% ABE, 31.5% GED/HSD, and 37% ASE/basic skills. We met Monday evenings from 6pm to 9pm.

Data I collected included students' reflections, learning logs, and work. I observed student behavior and interactions and kept my own log. As a variation on a log, students provided weekly "snapshots" to indicate their reaction to and reflections on that evening's activities or class. Students used slips of paper about the size of a photograph to give written and/or drawn feedback (Appendix 6). During the semester I decided to maintain a reflection journal for thoughts that the project provoked in me outside of class and beyond the scope of my research question.

I used other discrete, measures as well. These include: a math test, a class-generated list of "Nineteen Kinds of Anxiety about Math" and a companion anxiety rubric, and paper/pencil and audio MI self-assessments. These are described below.

To create a stressful math situation and, in effect, cause a low level of anxiety for research purposes, I administered a timed math test (Appendix 3). The group then delineated their sense of the emotional, mental, and physical components of math anxiety (Appendix 1). Following the test, I had my students rate their level of anxiety, using a five-point scoring rubric the class developed (Appendix 5). The rubric gave us a common language to discuss math anxiety and also involved students in authentic math activities through data collection, analysis, and presentation.

The students used the rubric to reflect on the components of math anxiety, particularly in terms of their own experiences on the timed math test. I used this one-hour process with 19 students upon our intial meetings (dates varied). We collected and recorded the data, which I later used for computation and statistics instruction with my students, again in the "real-life" problem-solving context of a research project.

Second Semester

For the second semester, my Math Lab class included 17 students: 94% women, 30% ABE, 35% GED/high school diploma, and 35% ASE/basic skills. Eight (49%) students were returning from the previous semester.

I had planned to repeat my MI survey, but considering that many of my students were auditory learners and that several students had already taken the paper/pencil survey, I adapted and used an audio MI survey developed by Meg Costanzo (1997), fellow AMI teacher-researcher. I also added a selection for students to consider the naturalist intelligence (Appendix 7). With this new assessment, I was able to provide an MI self-assessment to second semester students that was more appropriate to their learning styles. I also felt more comfortable about having returning students complete an MI self-assessment that was different from their first experience. The audio MI Survey presented a new entry point into students' reflections on their intelligences.

New students also took a learning styles inventory (Appendix 8), as part of our program's intake process. Therefore, information regarding individuals' learning modality preferences was available and added to a class chart for easy reference.

I had intended to replicate our first semester research activities as closely as possible, but mitigating factors prevented it. These included: increasing student enrollment without additional instructors, greater numbers of mandated students who were more challenging and more likely to resist new instructional practices or ideas, the presence of returning students who had already participated in the project, and the ongoing interruptions caused by my administrative and program responsibilities. I could gather student data sporadically at best. I continued to maintain both my teacher log and reflection journal. Three instruments provided important student reflections: About Me and Math" questionnaire (Figure 1), Review activity reflection sheet (figure 2), and the "Final Word" survey (Figure 3).

Me and Math

My name is________________________________

Today's date is _____________

How I feel about math in general, in my own words or pictures.

Do any of these words describe me and math?

math anxiety
math phobia
afraid of math
math is a 4 letter word
"I hate math!"

Thoughts about my past math experiences (in school or out):

Why I need math (or why I've been told I need it) :

short term:

long term:

Figure 1. "Me and Math" Questionnaire

In the "Me and Math" Questionnaire I used a variety of terms to elicit student responses about their feelings toward math because I felt I might have a varied level of sophistication in understanding some of the words (anxiety, phobia). I wanted to give students a choice of responses, and I hoped to interject some humor ("math is a 4 letter word") into the activity. I also wanted the students to experience the expectation of communication in the math class.

Activity Input/Reflection

Date: Name:

What we did:

What I learned:
(about me, about math)

How I might use this information:

Comments:

Figure 2. Activity Input/Reflection

The Activity Input/Reflection sheet (Figure 2) was in response to an activity that translated students' MI profiles information into a "radar" graph format (Appendix 9). I used this activity to have students revisit their profiles, think about the eight intelligences, experience a new way of expressing the information, and to start some conversation. I used "A Final Word" (Figure 3) to gather students' post-project reflections on math, math anxiety, and multiple intelligences.

A Final Word (or Two) for Math Lab+-
Fall semester 1997

1. Would, or did you, think of yourself as being fearful of math , or having math anxiety?

2. Do you feel more in control around math now? Why or why not?

3. Did you learn about how you learn, and did this play a part in any change for the better? (learning style, Multiple Intelligences, etc.)

4. Can you make any direct connection between less math anxiety and Multiple Intelligences? Please explain.

Figure 3. "A Final Word" Reflection Sheet

Third Semester

In the third semester of this project, Math Lab enrollment had increased to 25, ten (40%) of whom were returning students. The group represented a range of skill levels so great that the prospect of having a unified teaching situation seemed remote. Moreover, in order to accommodate the varying levels of quiet students needed to work, the class divided itself among four separate spaces -three classrooms and an office. My MI-related efforts involved providing new students with the audio MI Survey and consulting with them around the results of their surveys and related approaches to learning math skills. I continued to make regular entries in my teacher log and occasional entries in my reflection log.

FINDINGS

Finding 1: MI-related topics and activities seemed to encourage and generate student discussion about learning.

Findings

- MI-related topics and activities seemed to encourage and generate student discussion about learning.
- My own profile of intelligences affected the development and application of my MI-informed instruction and assessment.
- My introduction to MI theory and use of MI-informed instruction and assessment spurred changes in my teaching practices.

Our program has been developing an intake process to gain more information about our students and to inform curriculum development, instructional planning, and assessment. Prior to the introduction of MI theory, we relied heavily on a learning modality inventory which helped students define the sensory aspects of their preferred learning styles. In our program we try to structure instruction and assessment to address students' preferred learning modalities. The information is helpful to students, but its use is somewhat limited as the modalities are relatively fixed and the strategies are basic (e.g., working alone or in a group). The learning modality inventory did not generate interest or a great deal of interest among students.

Presenting the theory of multiple intelligences to the students led to comfortable and relaxed class discussions about learning, including learning difficulties. Talk in Math Lab is unfamiliar to Math Lab and had been unwelcomed. But more than a dozen students' self-assessments when viewed together illustrated concretely that each person has individual areas of strength. Each student could identify an area of strength. Discussing the intelligences helped some ABE students, who may never have experienced school success, recognize that they possess different kinds of intelligence.

Bringing in MI theory also seemed to help support a discussion about math anxiety among students. Prior to this study, students would tell me they hated math and leave it at that. After a discussion about the intelligences, one student responded in writing, "It was O.K. to feel all the feeling(s) that I felt when I do math. Know[ing] that I know this I will be able to do better at math. This week was better to understand" (sic) (Student D.B., Snapshot 02/03/97).

Several sessions were roundtable discussions in which students shared their frustrations with their own educational histories, along with their growing awareness of how people in general, and they in particular, learn. The students who participated appeared to be comfortable discussing problems related to learning, something that had not occurred prior to the introduction of MI. Several students expressed the wish that strength-based approaches such as MI were used with their children or when they first were in school.

The introduction of MI theory and the survey-generated illustration of our unique profiles of intelligences seemed to facilitate conversation among students about issues of education, even the more sensitive issues like learning difficulties and math anxiety. Perhaps the opportunity to recognize that each person is a complex collection of strengths and weaknesses created a comfort level that allowed students to open up about problem areas. At the same time, their introduction to MI theory might have helped students recognize the value of discussion and reflections about learning, making it a more acceptable activity, even for math class.

From my own perspective, I see the power of MI in this case was to get my students to acknowledge math anxiety on an explicit level, in discussion, and in combination with strengths-based strategies for dealing with it. Although students' discussions of MI, their own strengths, and math anxiety do not necessarily imply that MI helped alleviate math anxiety, they did provide the first step in that direction. MI showed itself to be an excellent point of departure for thinking about math anxiety and how students can work to overcome it. With my encouragement these students later developed a list of intelligence-related personal "stress busters," based on their understanding of how math anxiety manifests itself and of their own areas of strength. These included taking a walk in nature, listening to music or soothing sounds, focusing on the inner self through yoga, talking to a friend or relative, or doing Tai Chi.

Finding 2: My own profile of intelligences affected the development and application of my MI-informed instruction and assessment.

Drawing on my logical-mathematical and linguistic strengths, I had planned my project around discussions, printed information, paper/pencil surveys, and text-heavy material. I increasingly felt that I would have trouble conducting math activities and using resources that relied on intelligences in which I did not feel strong (e.g., musical, bodily-kinesthetic). As revealed in an entry in my teacher log, "Right now I am trying to teach past my own intelligences and include material to meet as many intelligences as I can, or examples thereof, so that the students can start doing this on their own" (February, 1997).

At the beginning of my research I felt the need to understand how the intelligences that were not my strengths actually worked for my students. Having never been able to master the very math manipulatives that helped many of my students, I felt unable to connect with their use, and therefore not able to provide as much support with manipulatives for my students as I hoped. This is an analogous situation with any intelligences, or areas of particular intelligences, that are not a teacher's strength area. It's a matter of not knowing enough to provide students with enough support to enable them to tap a particular intelligence.

I felt my only recourse was to set out materials related to my "intelligences of discomfort" and see what happened. For example, one class session was devoted to letting the students work on fractions, and demonstrate their understanding, using manipulatives and craft materials they selected. Mostly choosing to work in groups, students produced collages, cut paper into fractions, and drew pictures and diagrams. Student reflections that evening included the following: "It was much more fun this time because we worked in groups." (G.H.) "It went much better. We worked in groups doing fractions. Doing mixed numbers, improper fractions, and proper fractions. It was more relaxing." (S.H.) "Tonight was a great learning experience. The activity on fractions was fun and I learned from it. I also worked with a classmate which helped me learn easier."(S.S.) My own reflection in my teacher log was, "I do feel more positive about using a "hands-off" methodology in class and about involving more manipulatives (which don't work for me)."

Finding 3: My introduction to MI theory and use of MI-informed instruction and assessment spurred changes in my teaching practices.

Before my AMI research project, instruction in the Math Lab drew on information collected about students' preferred learning modalities. For example, my instruction was tailored around whether an individual was an auditory or visual learner, and whether the student was more comfortable learning alone or in a group. I used individualized study plans and commercially available math materials, as well as some teacher-generated materials. Most students were preparing for a formal assessment and worked on related practice tests (e.g., GED Math Test, college placement test, competency test).The student-set pace of the Math Lab limited the number of group activities I could conduct, as students worked on different math content at various levels, in support of their self-stated goals. However, I included some hands-on, group activities over the course of the semester that encouraged students to tap different intelligences.

With the introduction of the MI survey, administered at intake, my students came to have the MI language and their own survey results as an additional tool for understanding themselves as learners and math students. The survey encourages student to think about their learning and to develop a strategy based on this self-knowledge. The information is also made available to instructors. In Math Lab, we use the information as the basis for group math activities, finding different ways to present the data, for example using fractions, decimals, and/or percents.

As previously mentioned, I feel MI theory has become an intrinsic part of my approach to my students. I have always tried to see them as people with many possibilities, strengths and abilities; attributes which many ABE students react to with skepticism. With MI, however, the information appears more acceptable or believable to them. They buy into the notion that they have strengths that they can tap. This has made my educational philosophy both richer and more integrated, and it has given me more common ground on which to help students build their own foundations.

NEXT STEPS

I bring many ideas for future application in my classroom. from the AMI Project. For example, I plan to chart my classes' MI profiles, which helps me direct materials and instruction better in these often large groups and helps students recognize the complexity of intelligences (and available strategies) in their group. The information will be shared with the students to reinforce their growing awareness about learning, and to suggest learning strategies that incorporate the intelligences. For example, in a class where a number of students identify themselves as highly linguistic, I will encourage keeping math journals and using word problems. With students who identify themselves as highly spatial, I will encourage them to develop flow-charts or diagrams as we discuss algorithms or problem-solving strategies.

I also am planning to continue to share the knowledge I have gained through this project with my co-workers and to seek more information from the literature and fellow practitioners in the hopes that we might devise some kind of prerequisite course or orientation in which all our students would participate to provide them the knowledge about how they learn, so that their time with us will be as productive as possible, and so that they retain what they learn, and build on it to remain life-long learners.

As for my own approach to teaching, I will draw on my now internalized MI-informed lesson planning checklist as I prepare for class. While I can tailor my presentations along the specific intelligences I know the group exhibits, were I to be explaining a math concept to a group of students whose profiles I did not know, I would include as many of the checklist components as possible. For example, I might make sure to explain math concepts orally and in written form, use diagrams, charts, graphic memory aids, provide physical movements to elaborate on concepts when possible, such as walking two places to the right as I convert myself from a decimal to a percent. I believe that even if I were to be the only person in the room who had any knowledge about MI, and I used these techniques, students' intelligences would be engaged, and learning would be enhanced.

FINAL THOUGHTS

What "MI-informed" means to me now

As a result of my involvement in this project, I can now identify three areas in which I feel the MI-informed instruction and assessment I used can play an influential role:

1. In the student's metacognition: the awareness of the multiple intelligences adds substantially to students' toolbox of ways to enhance their learning.
2. In the teacher's metacognition: awareness about multiple intelligences and learning adds significantly to a teacher's toolbox of possible strategies to reach students.
3. In the classroom: materials and tools are aimed at or crafted around the multiple intelligences. This broadens the scope of experiences the student will encounter. MI enriches the learning environment in ways that resonate with students' intelligences, becoming a more relaxed and challenging environment for learning.

How MI theory might help strengthen students' readiness to learn

In looking back over this project, I see MI theory addressing student readiness to learn in areas that reach beyond my inquiry area. Readiness as we view it in our ABE program includes the cognitive knowledge base the student brings to class and where the student falls on the "reluctance-receptivity to learning" continuum. Students with a relatively broad knowledge base have several advantages over those with limited ones. They have more experiences and bits of learning on which to hook new learning. They have most likely included some risk-taking and learning from failure, which are assets and characteristics of a life long learner. For students who have not had the opportunity to acquire a relatively broad knowledge base, MI-based instruction might help provide new experiences and different ways to look at the world, all within a student-centered, supportive framework.

It would be ideal for all adult students to have access to a multi-faceted classroom, rich with materials, diverse learning opportunities, and a student-centered philosophy. I feel many students, particularly those who had difficult, impoverished (emotionally as well as materially) childhoods, would benefit greatly from such a learning environment. Many barriers would have to be met and overcome before adult students could have such experiences. Program finances and relatedly, paid instruction and preparation time are two that come to mind. However, the one barrier that money cannot solve is many students' reluctance or resistance to the change that learning will ask of them. ABE and GED students may be reluctant to try MI-based approaches at the outset, but MI may prove to be a positive influence for many of these students.

An approach that incorporates MI can help students begin to look at themselves in ways that lead to the kind of self-knowledge that generates the courage and fortitude to make and stick to goals. Students may become secure enough to "risk" learning and the inherent, requisite failure that accompanies it. Particularly through the development of the personal intelligences can a student become reflective which will lead the student to a better understanding of him or herself. This may explicitly or implicitly lead to acceptance, then desire for learning.

Fitting, rather than forcing, MI into instruction

An added word to other math teachers on the issue of presenting "non-math" topics in a math class in any depth. This was a topic I wrestled with, and one which influenced how I approached this research project. Most ABE and GED students come to the program with specific expectations, among which are that in a math class we will work with numbers and use workbooks. Such an approach is definitely not MI-informed, nor does it usually relieve people of the anxiety that math produces, as it only reinforces the "specialness" that math seems to have.

I had the good fortune to receive a copy of the Massachusetts ABE, and found in those standards the justification for presenting math in a different manner,consisted with MI theory. These standards define math as communication, problem solving, reasoning, and as connected to other subjects and real life. These standards resonated with my own personally long-held beliefs. My students were, perhaps, less easily convinced, alhough the ensuing discussions did provide the opportunities for much learning on both parts; for them about math, and for me about them.

I was further delighted to find that I was definitely not alone when I read an article in The Change Agent (vol 6) called "The Math Connection" by Kay Young, an ABE teacher from Shelbyville, TN. She expressed being concerned about planning lessons that would satisfy the Equipped for the Future (EFF) standards framework which emphasizes real iife applictions and "be pertinent to my students whose goal was to get their GED or complete their high school diploma." I shared this concern for my classes, wanting my students to experience and understand MI, but not leave class feeling they were doing activities at the expense or instead of "doing math." As Kay had done, I too used data collection and statistics as a lesson framework in an effort to make a more natural connection between numbers and words. We used fractions, percents, decimals, and graphic representation of our data. And like Kay, I experienced some resistance from my students. This was probably because we were doing something different, non-traditional, and unexpected. But I kept going, with the help of non-resistant students in the class, and those who began to see some benefit from, or became interested in the Multiple Intelligences/Math Anxiety topic. I partnered this topic with information about the ABE Math Standards which I hoped would further legitimize the talking about math and numbers. I realized that, in spite of their expectations, especially for students with strengths in the linguistic intelligence, readings and discussions could open the way to feel more at home in the often alien world of numbers and symbols.

Martha Jean

ABSTRACT

In her AMI research project, Martha Jean's challenge is to develop an approach that accounts for the rich diversity of intelligences and possible approaches represented in MI theory, while addressing the quite narrowly defined context of GED preparation. Martha has a particular interest in students who have been diagnosed or demonstrate ADD or LD characteristics. These students tend to have poor attendance and make little progress. Martha's research question is, "Can MI informed lessons help the progress and attendance of LD and ADD students preparing for a GED?"

Martha addresses her question by developing four types of MI-based experiences that respond to the different needs that GED preparation engenders: (1) activities to introduce students to MI theory; (2) "warm up" activities; (3) topic-based whole group activities; and (4) Choose 3 activities. Martha uses the introductory activities as a rationale for the practices in her classroom and to ensure that students understand they each have a unique profile of intelligences into which they can tap to prepare for the GED. "Warm up" activities are fun experiences, such as a "Koosh shoot," that help warm students to doing the more tedious tasks of GED preparation, such as workbook problems and practice tests. Whole group activities are meant to teach specific skills or topics, for example map reading, and help Martha gauge her students' understanding of that skill or topic.

The heart of Martha's approach is "Choose 3" activities. Based on her own observations and on student requests, Martha chooses a GED topic, such as measurement, or planets, or editorial cartoons, and develops about nine activities, among which students choose three to complete. The Choose 3 activities engage students in the material in ways that feel comfortable to them and are most likely to lead to understanding.

Martha's findings bear out the value of an MI-informed approach to GED preparation, particularly for ADD or LD students. These students respond overwhelmingly favorably to the MI-informed activities. In fact, their attendance proves to be significantly better than of the students in Martha's non-MI-informed classes. Martha's data also demonstrates greater progress toward GED preparation for ADD or LD students in the MI-informed classroom.

While Martha's findings strongly suggest the benefits of an MI-informed approach, they must be tempered with the realities of the context. Martha's fourth finding is that whether or how MI theory is applied depends on where students are in the GED preparation process. Namely, as students approach GED-readiness, their studies need to narrow to specific GED content and to discrete test-taking skills, and away from the broad themes of Choose 3 activities.

Martha Jean

RESEARCH CONTEXT

I conducted my research project at two sites that are under the auspices of Community Action, Inc.. The Pettengill site is in Salisbury, and the ELMS site is in Amesbury, Massachusetts. Salisbury is the northern-most town on the ocean in Massachusetts. It is a mostly white, high poverty town, with no public transportation, and a homeless population in Massachusetts second only to Boston. Pettengill is a large old house used for most of the city's social services, including teen programs, drug/alcohol and AIDS counseling, and a food bank.

At Pettengill, class sizes range from four to seven students. It is an open entry/open exit program that serves students mostly between the ages of 18 to 25 years old. Tuesday and Thursday evening classes at Pettengill are from 6-9pm. They are for any adult at the Pre-GED or GED reading level as measured by the ABLE Test. Adult Homeless Education classes take place on Tuesday and Thursday from 9 am-noon at the Pettengill site. To enroll students have to be homeless or potentially homeless (very low/no income, move a lot, live in a motel, etc.). Students can be at any level of reading to attend. All students participating in this study were preparing for their GED tests and were reading at GED level.

Can MI informed lessons help the progress and attendance of LD and ADD students preparing for a GED ?

When I first started the project, I decided I would make changes in one class only, my evening GED class, then I could focus my attention on that group. Another Homeless Education class in Amesbury, became, in effect, a comparison group. Amesbury is next door to Salisbury. It is a blue-collar and low-income town, with a mostly white population. In that class I continued to have students work daily almost exclusively in workbooks and complete writing exercises every other week. While I focused on one MI-informed class (Pettengill) and one non-MI-informed class (ELMS) in the first year, in the second year of the study, I conducted my research in two MI-informed classes, both at the Petttengill site.

RESEARCH QUESTION

Can MI informed lessons help the progress and attendance of LD and ADD students preparing for a GED?

I started the AMI Project in 1996 with a much broader question about the application of MI theory in my teaching to all my GED preparation students. I narrowed but maintained my central focus on GED preparation because I was interested in helping adult learners reach their GED goal. I narrowed my focus knowing that goal to be especially difficult for adults with learning disabilities and/or attention deficit disorders.

My classroom experience in both Amesbury and Salisbury in the years before the AMI Project led me to my question. I was bothered by the number of learners who quickly dropped out or struggled long and hard with workbooks only to make small advances. I was also aware that many of my students' abilities had not been acknowledged or strengthened in either the school system or in the classes I was teaching.

I had had some success using pictures, photographs, and other visual material to inspire students' writing process and increase their writing practice for the GED essay. When I reviewed some MI materials (Lazear, 1991a, 1991b), the ideas resonated with my conception of trying to reach learners in many different ways. The AMI project sounded like a vehicle through which to explore how to integrate diverse, in this case MI-based, approaches that might connect with those students who typically left the program quickly or failed the GED.

My question emphasizes student attendance and progress. Only regular attendance provides enough opportunties to learn and practice what is learned to be able to make progress. By progress I refer to students' learning and retaining GED topic infomation and/or methods of test-taking which will help them pass the GED.

EVOLUTION OF MY WORK AND THINKING

I'm a "grab-an-idea-and-run-with-it" learner. I like to try something new and change it as I go. Before the AMI Project I had some thoughts that related to MI. As a K-12 substitute teacher, I had often wondered why they dropped all the "fun" stuff children did in kindergarten and first grade, as if those approaches didn't work anymore. As an adult educator, I had observed how successful ESOL classes were those that seemed to entertain every possible way to help a person learn English. I had read some articles about MI and was interested in finding out more about how the theory translated into classroom practice. Those original articles started me on a quest.

Skimming some MI resources (Armstrong, 1993, Campbell, 1994, Lazear, 1991a&b), I wondered whether I might "get away with" trying out some of these ideas in my own class. It was then that the AMI Project serendipidious materialized and gave me a chance to try out these ideas in a structured and supported way. I immediately read those MI resources more thoroughly and was ready to try out some ideas I had about ways to learn the GED material. I also read Gardner's (1993) Frames of

Mind, which gave me an appreciation for the science of the theory.I wanted to design lessons that connected students to the GED topics, helped them learn or practice information for specific GED topics, and helped motivate and lead them to complete the GED workbook test practice activities.

Throughout the project it turned out to be other teachers' experiences using MI theory that inspired me the most (from the AMI project, Project Zero Summer Institute, and conference presentations). I integrated many ideas into my GED lessons from the work and successes of my AMI colleagues. For example, "Activities for Unit on Drug Abuse" (Costanzo, cross ref) was a valuable resource for my MI-informed lesson planning.

When I began the project, I thought it was important not only to introduce MI-informed activities but to present and explain the theory and have students learn about it in depth. This, I soon realized, was not getting them any closer to their GED goals. I found that an introduction to MI was sufficient to help students understand the two things I wanted them to understand about MI: that it described the different ways they were intelligent, and it explained my classroom design and instructional approach.

I also realized that making all students do all the MI-based activities I designed was only somewhat better than making them do only workbook activities. I thought they benefited from the opportunities to learn through their areas of strength, but I was still requiring them to use methods that had rarely worked for them in the past. So I integrated a "choice" approach in my classroom: I gave students choices among activities so that they could engage with the material through intelligences to which they were drawn. The activities followed GED topic-based lessons and gave students approximately nine activity options to help them learn or practice facts, ideas, and concepts related to specific GED topics or tests (See Appendix I for examples). Learners were asked to complete three of the activities. They could work alone, with a partner, or in a group. I liked this "Choose 3" approach and continued it into my second year of research.

IMPLEMENTING MI

I integrated MI theory into several aspects of my instruction. First, I introduced MI theory explicitly to students so that they would understand and buy into the idea of learning GED material in unfamiliar and diverse ways (Cross ref See Jean & Fortini chapter). Those lessons, in which all students participated, were *informed* by MI as well, that is, I tried to teach MI theory through MI theory. For example, I might have students piece together an MI graphic, such as a wheel with intelligences and their definitions, in order to utilize students' spatial abilities while they learned about MI theory. Other activities lent themselves to other intelligences, such as using their linguistic and intrapersonal strengths to write about the types of work they enjoyed and which intelligences they used in work.

I also used MI theory to develop warm up activities. That is, rather than focus on the content of material to be learned and devising related MI-based activities, warm up activities were enjoyable activities loosely based on the eight intelligences. They were meant to help students relax and motivate them to participate in the more tedious business of GED workbook activities.

For example, I invented the "Koosh Shoot." The Koosh Shoot is a GED workbook practice activity. Students are given a couple GED workbook pages to read and complete. Large print numbers "1" through "5" are strung individually across the classroom. Each learner who volunteers to answer a question gets to shoot the Koosh with a Koosh Ball Sling, taking aim at the number which corresponds to the correct answer in the booklet after the group has discussed and checked the correct answer. Although this may utilize bodily-kinesthetic intelligence, the main point is to provide a range of fun activities to get students engaged in the not so motivating GED materials.

A third way I used MI theory was to develop whole group MI-based activities. That is, I used the eight intelligences as a tool to brainstorm different ways for students to engage in the content of GED material as a group. For example in our study of maps and time zones, I put wide black paper strips on the floor to divide the floor into U.S. time zones. I explained to students that the lines represented the U.S. time zones and that we were standing in Massachusetts on the East Coast. I taped a big paper yellow sun to the window.

I said, "So, here we are in Salisbury and we're going to make believe that the sun has just come up....it is 5am. If I walk west into the next time zone called Central, has the sun come up yet?" We made our way from one time zone to the other and I occasionally posed questions (e.g., "What if it is 8pm here on the Pacific Coast in the Pacific Time Zone? What time is it in Massachusetts in the Eastern Time Zone?"). Through such questioning and physically "walking through the time zones" students tapped their linguistic, spatial, kinesthetic and logical-mathematical abilities to help them understand the concept of time zones.

The primary means I used to implement MI theory in my classroom was through "Choose 3" (C3) lessons. Choose 3 is a lesson format I designed which provided students with several activities, usually about nine, among which they chose three to complete for the day's lesson (figure 1, and CROSS REF Lessons pp. x-xx). I designed a C3 lesson to fit the subject area that needed to be taught or reviewed, and that students had requested. Providing a range of "entry points" for students based on Gardner's eight intelligences, the C3 activities were my attempt to allow students to enter into GED materials through their own strengths. Initially, I relied more heavily on commercially available MI resources to develop C3 activities. Later, lesson ideas from my AMI Project colleagues helped enrich my own C3 activities.

figure 1 Time Zone

ARE YOU IN THE ZONE?
THE TIME ZONE - CHOOSE 3
ALONE, WITH A TEAMMATE, OR IN A GROUP. DO THREE.

1. Outline or color in the Eastern, Central, Mountain, and Pacific time zones in the United States.

2. Write in as many states names as you can remember and then use the states map to fill in the rest.

3. Show on a time zone map what time it is in each time zone when you wake up, eat lunch, eat supper, and go to sleep.

4. Write how each time zone is different from the others.

5. Pick one city or town from each time zone and write about the type of music that you think is popular in each one.

6. Using an imaginary floor map, walk down each time line and name the states you go through or border.

7. Look at the GED questions in the packet. On your map write in (marker or pen)the names of the cities that are mentioned.

8. Rate the four United States time zones from your favorite zone to your least favorite. Write why you feel that way about each one.

9. Do a class survey. Ask each person which is their favorite and least favorite time zone and why. Write or graph the results.

It was my students' requests to review Social Studies that led to our time zone study. In response I designed "Are You in the Zone?" (figure 1) to give my students practice looking at the U.S. map and locating cities and time zones on a map, skills needed for the GED. When I'm designing a Choose 3, I generally look at the GED related material, then start thinking about how each intelligence could be used to learn that information. So, someone who has spatial ability might like tracing or coloring, someone who likes to use their body to learn might like walking through or around the visual information on the topic, and someone who likes numbers might like to graph the new information.

A typical class session began with whole group activities, often MI-informed, related to the GED topic at hand. Whole group activities were followed by Choose 3 activities and student sharing of their C3 work. The session would end with students working from a packet of topic-related Pre-GED/GED questions I had prepared to give them explicit practice with related GED materials. "Warm up" activities might occur during the whole group or workbook activities. Through these activities, particularly the Choose 3 activities, I implemented MI theory in ways that I hoped would engage students, keep them coming to the classes, and ultimately help them make progress in their GED preparation.

METHODS

I designed several tools to gather data relevant to the two aspects of my research question: student progress and student attendance. The 1996-97 "MI informed class" data came from the Salisbury Tue/Thur evening class. 1996-97 data from GED students in a "non-MI informed class" came from the Amesbury class. In the first year of the project I used a Learning Log (figure 2) and a Daily Log (figure 3) to ask students about influences on their learning. In that year students in my non-MI-informed class kept the Daily Log. Students completed the logs after each class session. I also wrote notes during and after class. I did not collect data in 1997-98 on non-MI-informed classes, as both project classrooms, a morning Homeless Education class and an evening GED class, were MI-informed.

figure 2

LEARNING LOG

Your Name ____________________Today's Date ________

1. Today what did you discover about yourself as a learner?

2. What helped with that discovery?

3. Have you learned anything that will help with the GED test? If yes, what?

4. Have you learned anything that made you think about career goals? If yes, what?

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figure 3

DAILY LOG

Today's goals:

What I worked on today:

My comments about today:

My goals for the next class:

My teacher/tutor comments:

The two logs were overwhelming for my students, who ended up writing very brief comments and/or only completing one log. I frequently had to explain what the questions meant on the Learning Log and students often gave only short and simple responses. Question 4 on the Learning Log referred to an original research question and became irrelevant to my study early in the process. Therefore in my second research year (school year 1997-98) I discontinued using the student logs. I found I could gather more and richer data by simply asking my students questions aloud at the end of each session (figure 4) and completing my own daily observation and reflection log (figure 5). Both methods were designed to help answer my research question as well as to design and plan MI-informed lessons.

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figure 4

Questions to Students On This Session

1. What worked for you? (MI Activities)

2. What didn't work? (MI activities)

3. Do you want more review on this subject or this specific area?

4. Would you like to focus on other areas or subjects?

5. Any other comments?

---

figure 5

AMI TEACHER DAILY LOG

1. What stood out?

2. Is it working or not?

3. Any changes needed?

4. Anything else?

Other sources of data I used included: Student attendance records, intake information from a program registration form, and student work. I compiled all these data sources and additional reflections into "Monthly Reports" to which I referred to frequently in my analysis.

FINDINGS

Findings

- LD and/or ADD students responded positively to MI-informed activities.
- Attendance of LD and/or ADD students in the MI informed classroom was better than in non-MI informed classes.
- Students with LD and/or ADD in an MI informed class made greater progress toward GED readiness than those in my non-MI informed classroom.
- The most appropriate applications of MI differ depending on where students are on the GED preparation "continuum."

My analysis resulted in four main findings (above). Although all students participated in the activities from which I gathered data, I focused my analysis on GED students who had been diagnosed in school as having ADD/ADHD or LD (Learning Disability) or whose behaviors corresponded with behaviors of those with ADD or LD (see Appendix 2 ADD Diagnostic Criteria and Appendix 3 Learning Disability Characteristics).

Four of my students -Cathy, Ned, Jane and Ted- present good examples of the experiences of all my ADD and LD adult learners who participated in the MI-based activities. These four students attended my 1997-98 morning and evening classes. Cathy and Ted had been diagnosed in public school as ADD/LD, while Jane demonstrated LD characteristics and Ned both LD and ADD characteristics. Because the four represent well the experience of my ADD or LD learners, they have a strong presence in the Findings. Brief profiles of each follow below. I will revisit Cathy, Ned, Jane and Ted at the end of the Findings section.

Cathy enrolled in the morning class on Sept. 16th, 1997. Her record from the previous year showed that she had expressive and receptive learning disabilities (II)

Key To Data Source Codes
AR = Attendance Records
II = Intake Information
IT = Interview
MR = Monthly Reports
SL = Student MI Log
SW = Student Work/Progress
SDL = Student Daily Logs
TL = Teacher MI Log

She said and her classwork indicated that over the summer she had forgotten all the math she had learned the previous year (MR, Dec. 18). Cathy did not do well when she worked alone or on isolated paper and pencil tasks.

Ned enrolled Oct 21st, 1997. His speech tended to ramble and he didn't easily or quickly come to the point. He frequently had a "far away" look (MR). In November and December these ADD-like symptoms were evident, as I noted, "Ned does a lot of staring off, apparently at nothing, when he's not talking" (TL-NV 4). Ned also had problems following directions (MR-NV 13). On some of the few occasions when he did write in his daily log, Ned wrote, "Can't focus" (SDL NV) or "Want to focus better next class." (SDL DC)

Jane enrolled Sept 16th 1997. Jane said it took her a long time to remember information, that she hated to read, and that she didn't understand some or a lot of what she read. (II & MR-ST 16) This was borne out in the class as Jane frequently struggled to understand what she was reading and had poor retention when she returned to the same workbook topic. She said, " I always do the easiest." She frequently worked with her friend Jean, rather than working alone. (SL-ST 18)

Ted enrolled Sept 30th 1997. Ted said he had ADD and learning disabilities. He said he liked math, but he didn't like writing. (II & MR-ST 30) Ted did math in his head, quickly and then watched what other people were doing and joked with Gary. (MR-OCT 2) And from my notes, " It is difficult to get Ted to write anything, and when he does it is often short or incomplete. Ted is only comfortable with math related activities. When he finishes those, he has a hard time doing any other choices. (SW-OCT 7,14,28)

Finding 1: LD and/or ADD students responded positively to MI-Informed activities.

As a teacher students' positive statements are significant to me because the learners are saying that the activity engaged them. To connect students to what they need to learn in a way that they describe as "fun," means that they are going to be more willing to spend time learning what they need to about that subject. From an MI perspective, what they are saying is that when they find a way to learn that taps their strengths, they enjoy the learning experience.

Students in my MI-informed classes repeatedly commented on how much they liked the Choose 3 activities. When I handed out a Choose 3, students were happy to read them, make their choices among activities, and begin to work alone or in groups. Students often engaged in conversations among themselves about how particular choice activities could be approached.

I also observed "engaged" body language: animated faces, bodies leaning forward while students talked or engaged in making a product. Unlike my non-MI-informed classes, these students were more willing to start sessions and to do workbook activities. There were far fewer behaviors I characterize as avoidance: verbal and physical classroom disruptions, requests for cigarette or coffee breaks, or decisions to go home early.

Students' oral and written feedback demonstrated the positive responses the MI-informed classes elicited. Students regularly responded in their Daily Logs with comments like: " I had a really good time," "It was interesting," "It was fun."

Although I believe enjoyment of the activities is a key element to student engagement in the material, students' responses went beyond having fun. For example, Jay said he liked hands-on activities because "I can relate to this," referring to one particular Choose 3 activity. (MR Sept 18) Terry said she liked writing about three graphics --an eagle, a book, and a person-- because, "It told me about myself." She wrote how she was like the animal pictures she chose and said the activity, "helps you learn and get self understanding." (TL Sept 25)

Other reactions included:

> -*It's "more interesting instead of writing plain old numbers." [C3 Proportions] (TL Oct.2)*
>
> -*"what worked was that they could visualize" [C3 Proportions] (TL Oct. 2)*
>
> -*it was "hands-on" [C3 Proportions] (TL Oct. 2)*
>
> -*it was "clearer than before" [C3 Proportions] (TL Oct. 2)*
>
> -*"I kind of knew it, but doing it visually helped retain it." [C3 Measurement]*
>
> - *"This is a stress reliever." (TL Dec 9)*
>
> - *"Drawing pictures helps and just talking about what they meant [helps]. I find that if you joke around it's easier to learn than when you're really serious." (TL-JN 8)*
>
> - *[What works is] "Writing the sentences and seeing people's pictures. Visualizing is important." (TL-JN 8)*

On November 4 we covered four GED workbook readings and their related questions. In my Teacher Log I noted, "There was a lot of laughter and fun from the Koosh Shoot....In the past, when I have done group work in the books, there has been an immediate negative response. Usually there is moaning or whining and lots of reluctance to begin. Today the students were willing to try it, they stayed cheerfully on task for longer than usual, and they helped each other figure out some tough GED questions. Similarly, in my November 25 Monthly Report I wrote, "I observed that students were laughing, talking, writing, drawing, figuring, and discussing the Choose 3 [Turkey] options."

When asked how an MI-informed activity compared with what she had experienced in other classes, Cathy said, "It's more hands-on here" (TL Nov. 13). When asked, "Which helped you learn better?" she said, "This one." as she pointed at the C3 Planets sheet. When the Choose 3 Planets lesson was over, I asked students what they liked and what helped them learn. One of my target students had chosen to design an alien who could live on one of the planets other than earth. To design the alien, students had to know the gravity and temperature of the planet, among other characteristics. She responded that "making the people" helped her learn the material and "I actually wanted to read for once in my life" (TL Nov. 13).

When I asked students, "Did any particular activity help you learn about the planets?," they replied:

> *"Making the aliens from different planets."*
>
> *"Cause I got to see. I had to find out what life was like on the planet to be able to make it."*
>
> *"Being able to do it mathematically." (TL Nov. 13)*

I also asked how this experience compared to other learning or classroom experiences. Students had this to say: (TL Nov. 13)

> *"Because if we're in another class they would have just quickly briefed everything. They handed us stuff and say 'Go for it.' They just run through things and say OK you're going to be tested on Friday. Learn it all and be ready."*

> *"They give you information to just learn on your own."*
> *"We didn't get to ask questions."*
> *"It's never hands-on. It's easier to learn if it's hands-on."*
> *"It's totally different. In school, in the classroom, teachers hand out all papers to all students and then ask you to look over the papers more while they talk and chalk on the chalkboard to explain the different planets without you visually doing it yourself.*
> *"And you're just copying notes is basically what she's saying, you have no idea 'cause your just paying attention to copying them down. I'd just copy and not know what the teacher is talking about."*
> *"You'd just copy a bunch of notes and... now you have homework blah, blah, blah. Go over your notes. OK, how do I teach myself?!"*
>
> *"I prefer hands-on because it clarifies everything. If it was all workbook, I wouldn't do well cause I'd lose my interest. I wouldn't stay long cause I'd lose my interest. (IT Feb 10)*
>
> *"[Choose 3 activities] clarify your understanding. To know something is one thing. To know something and do it is another." (IT Feb 10)*

On December 11, 1997 I asked students, "How does [Choose 3 Angles] compare to reading it in the GED book or the way you were taught in school?" One student responded, ""This is a hands-on experience. Visualizing it." Another added, "You discuss it and talk with others about it. It helps you to understand. There was no communication in school." (TL Dec. 11)

On May 5th Cathy responded to the same question, "[Choose 3 activities] give you a different way of looking at problems. You go through the problem more this way. In the workbook you just do the problem, that's it , and [with] this you can work together.... I concentrate more with those (C3). My mind drifts if I just do the workbook."

Finding 2: Attendance LD and/or ADD students in the MI-Informed classroom was better than in Non MI-Informed classes

If students do not attend and participate in learning activities on a regular basis, then they will experience little to no progress preparing for the GED. In the six years preceding the project, I had seen many LD or ADD students with very erratic and short-lived attendance in the program. And if these students did attend regularly, their actual classroom work usually was minimal. In the first year of the research project I wondered how an MI-informed classroom would help learners use their intelligences as test takers. While considering that and designing MI informed lessons, I noticed that those types of students, who had in the past left after a week or two, or stayed and did very little work, were staying and were working much more intensely in the time they were there.

After several years of seeing these students consistently struggle with workbooks then quickly depart, or attending class but not doing their work, it was an amazing discovery that something seemed to be motivating them to stay with the class, attend full sessions, and/or complete the work (see figures 6-9, data source = AR) . Monthly and total hours of attendance increased in CLASS B, my MI-informed class (see figures 6-10). Students' monthly average, even when counting enrollment and exit months which frequently begin or end mid-month, were almost all higher in Class B than CLASS A, the non-MI informed class (Class Averages: Class A = 5.8, Class B = 9, Class C = 13.5, Class D = 11.85). The only thing I had changed was the once-weekly addition of an MI informed lesson.

What these numbers don't show is the actual work done during the hours that these students were marked as attending. Not only did students spend increased time in the classroom, they spent those hours engaged in reading, writing, discussing, building, manipulating, creating, and producing information and materials that were related to the GED tests they were preparing to take. Ansel of CLASS A spent most of his time getting up, walking around, taking cigarette breaks, and rarely sitting for more than 5 minutes. ADD/LD students in CLASS A took longer and more frequent breaks and generally completed less work than students in CLASS B. Teresa from CLASS B who, like Arthur, was easily bored and had other ADD behaviors like extreme distractibility, impatience, and disorganization, spent at least half of the class hours actively participating in activities and some workbook exercises. The other ADD/LD students in CLASS B sat and worked at both the MI-informed and GED workbook activities longer than students spent on their classroom work in CLASS A.

The MI-informed lessons sometimes led learners to the information, sometimes taught the facts, and often helped students transition into GED workbook/test practice activities. For reasons best explained in students' own words (see Finding One above), they wanted to attend the MI-informed classes, which meant they had excellent attendance hours. No one who enrolled in these two classes and attended class with an MI-informed lesson dropped out of class suddenly or for no good reason. In fact Jean, who has child care problems, and Frank, who left for a jail term, both came back in June to attend a summer session.

Key to Figures 6 through 9

* = month enrolled
% = total hours attended that month / possible attendance hours for that month
(Generally students enrolled and exited in the middle of the month so I did not include the % on those months.)
{ } = total hours in program

figure 6 Attendance by hours of LD and/or ADD students in '96-97 non MI-informed class

CLASS A (Non MI-Informed)
1996-1997

	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
Possible		21	18	18	24	18	24	21	24	
Arthur (8)		*6	12 67%	6 33%	12 50%	9 50%	3			{48}
Brett (6)		*6	12 67%	3 16%	6					{27}
Jim (3)		*3	6 33%	3 16%	0	3				{15}
Fanny (6)					*9	6 33%	3			{18}
Seth (6)			*6 33%							{6}

figure 7 Attendance by hours of LD and/or ADD students in '96-97 MI-informed class

CLASS B (MI-Informed)
1996-1997

	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
Possible		21	18	18	24	18	24	21	24	
Kate (10)			*9	12 67%	12 50%	6 33%	12 50%	12 57%	9	{76}
Janey (9)					*12 50%	9 50%	6 25%	12 57%	9	{48}
Carol (8)					*12	6 33%	6	got GED		{24}

figure 8 Attendance by hours of LD and/or ADD morning students in my 97-98 MI informed classroom.

CLASS C MI-Informed
1997-1998

	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
Possible	15	21	18	18	24	18	24	21	24	{171}
Cathy (15)	*9	21 100%	18 100%	15 83%	21 88%	12 67%	18 75%	9 passed math GED		{123}
Jay (16)	*15	21 100%	18 100%	16 88%	12 got a job					{64}
Ned (9.5)	*6	15 71%	15 83%	12 67%	6 25%	3 got a job				{57}

figure 9 Attendance by hours of LD and/or ADD evening students in '97-98 MI-informed classroom.

CLASS D MI-Informed
1997-1998

	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
Possible	15	21	18	18	24	18	24	21	24	{171}
Terry (15)	15 100%	21 100%	9 moved							{45}
Jane (15.75)	*15 100%	21 100%	12 67%	6 33%	15 63%	15 83%	24 100%	18 86%	math, writing test ready	{117}
Gary (8.4)	*6	15 71%	6 33%	9 50%	6 all tests ready					{34}
Ted (12.75)	*3	21 100%	15 83%	12	moved, math test ready					{51}
Ron (7.5)		*12 57%	3 moved							{15}
Eli (10)		*3	12 67%	18 100%	jail					{33}
Vic (13.5)					*21 88%	6 left, drug problem				

Finding 3: Students with LD and/or ADD in an MI-Informed class made greater progress toward GED readiness than those in my Non MI-Informed classroom.

For this report, I define progress as a student's incremental advances in learning and understanding material that will help him or her with the math and comprehension questions on the GED tests, and/or developing writing skills needed for the GED essay. If a student does a GED-based activity and learns something s/he didn't know before, or learns it more completely, then they have made progress. Students need to move from being reluctant to willing, and from being willing to actual practice, for progress to occur.

Students enrolling in GED classes need to be test-ready before taking each test. "Test-ready" means that the work that they are completing in the GED workbooks and/or the results of a practice test show that they can score enough points to pass that test. To make progress toward those goals, my past class practice was to have students use the workbooks almost exclusively. Only in writing did I have frequent "creative" activities to inspire a variety of practices that would improve the students' essays.

In my past teaching experiences, some of the difficulties interfering with student progress were very poor attendance, distractibility, reluctance, inattention, boredom, memory deficits, and student dissatisfaction. My application of MI theory in three different ways -"warm up" activities, MI-informed whole group lessons, and Choose 3 activities, seemed to change the extent to which these problems were present. That is, students attended class more regularly, voiced more satisfaction with classroom offerings, participated willingly, spent more time interacting with the topic subject, and retained information that they subsequently used in workbook and test practice.

Depending on the topic demands and student needs, one MI approach might be more effective than another. For example for essay writing, I used MI simply to get students writing, so I could rely more on "fun" activities. But with the math GED, which emphasizes knowledge of math concepts and discrete math skills, I used math content- and skill-specific Choose 3 activities. In other subject areas on the GED, reading comprehension is emphasized. Therefore in subject areas, such as social studies, I included Choose 3s that involved students in reading about the topic at hand while engaged in a range of MI-informed activities. Examples of student progress below relate to their involvement, learning, and understanding of GED topics.

Writing for the Essay

Almost all GED students with LD or ADD are extremely reluctant to write because it is often where their disabilities cause many problems. They can have difficulty expressing thoughts, spelling, sequencing, and/or organizing. However, if they write, they will improve. Choose 3 and other MI-informed activities gave them opportunities to write from their strength areas. With Choose 3 activities there always seemed to be a choice that the learner felt comfortable trying either alone or with a partner. Students who disliked or even hated writing were willing to write. Even someone like Ted, who didn't like any English-based workbook activity, participated enthusiastically in reading the Punctuation Play and designing symbols to represent punctuation marks. Generally the MI-informed activities inspired my students to write. They wrote willingly and often more than they ever had in the past.

On September 18, Jay, a typically relustant writer, chose to write using a photo of a wolf as a prompt

(TL/SW Sept. 18). He noted that one passage suggested his similarities to the wolf. He read aloud, "A wolf is timid, misunderstood, loyal, familiar with surroundings, and passive unless provoked." Jay added, "I don't like confronting, but I defend. I was misunderstood in school." In the same activity, Terry uncharacteristically read all that she had written for her Choose 3 activity, a page-long list of how she was like the several animals she had chosen.

On October 14 students participated in a "Frame pictures" activity. In this activity, students wrote about a picture, I corrected their grammar, and then they re-wrote their piece in a picture frame. Ted, who hated to write, chose a frame of a man painting. He described the painting process after I suggested that he do a step-by-step explanation. Jane wrote a nicely composed piece by explaining three reasons she loves to read. Her writing reminded me that it's reading the "boring school stuff" that students like Jane find difficult and dislike. (MR/TL/SW Oct 14)

When Ned and Jay tried to work in the workbooks, one page was about their limit if they were working alone. Ned wrote very short (5 - 10 sentence) essays. Jay increased his writing capacity and focus somewhat. In the past he would write about 10 sentences. Now he writes between 20 and 30 sentences. "...[T]he activity did keep them all writing. Jay was very tired, but he still wrote. (MR/TL Dec 9)

On February 27 I noted, "Jane's writings are getting better each time she writes. She has her feelings in the writing, but needs a little more work on sequencing. Jane made the paper airplane after a lot of work. It flew, too. Mary made a very complicated design and it also flew. I then asked them to write their essay. Students wrote interesting essays comparing the problems and/or benefits of each activity each time they write. (TL-FB 27)

Cathy said, "Reading the [punctuation] play pointed things out. It made me understand where stuff goes." Ned showed his punctuation picture and his sentences. I made some corrections in his sentences later. Ned said, "Drawing the punctuation marks identifies them. In the process of doing it ...I learned something new about something I needed." (TL-JN 8)

"Tonight I handed out Paint by Numbers Choose 3, a pre-writing activity. The paper, paint, brushes, and water cups were on the table. Jane, Gary, and Vic looked over the Choose 3 as I read and they started right away. There was a lot of quiet concentration. Jane and Gary picked the choices that asked for shapes or colors. Vic picked choices about feelings and rhythm. When they were done with the Choose 3, I said they could pick out a painting they liked and write a least 5 things they liked about it. ...Jane and Carl chose pictures and each wrote five sentences about what they liked about their paintings. (TL-JN 22)

Math

For math I used Choose 3 activities to give students other ways to understand the concepts before moving to the paper and pencil approach of the workbook practice book.

On October 2 Cathy chose to do #2 among the Choose 3 Proportions activities (see CROSS REF lesson). After Cathy set up the problem we discussed it:

C: "So what they have to be is...?"

M: "A relationship between these," pointing at 4,8,and 5. (Cathy needs to identify the number that is proportional to 5 in the same way that 8 is proportional to 4).

C: "Well, this (8) is double that (4).

M: "Yes."

C: "Then this is 10."

M: "Why?"

C: "Cause it's double, like that (she pointed at the 4 and 8).

Then Cathy made two "proportion people" out of playdough {#3, Proportion Choose 3}. I noted, "This face looks twice as big. What about the eyes?" Cathy picked up the eyes and compared them, saying, "They're too big," and proceeded to makes them smaller.

On October 14 I offered my students the Choose 3 on measurement. My reflections included:

> *There was a lot of activity in Choose 3 Measurement tonight. Even Gary did two with Jane. They did {#2} with Playdoh. Jane figured the measurements by looking and Gary figured them by "mooshing" the 3 teaspoon measurements together to make a tablespoon. They poured water for qts. gal. pnt. cp. He did {#6} alone by drawing an ant and the Eiffel Tower. Ted did {#8} and said, " I know for a fact that four quarter notes equals a whole - the same as four quarters equal a dollar." He made a graph {#6} of everyone's height. He did {#9} with his partner. Terry wrote {#7} and measured her body {4}. (TL/ SW/DL Oct 14)*

On November 4 students participated in the Choose 3 Perimeter, Area, Volume. I wrote:

> *Cathy and Lynn are learning a lot in the Choose 3s that are math-related. They both needed a review on area and volume of circles and cylinders. They used Playdoh to create a visual representation. Then they did a lot of explaining to each other when they had different answers on the workbook pages. [Inter] (MR/TL Nov 4)*
>
> *Through the Choose 3 Angles, Cathy and Lynn got to review something they had just started learning in the workbook. Ned focused on one topic and appeared to understand the math concept involved. (MR/TL Dec 11)*

Like writing the essay, doing the math for the GED has an equally fear-inspiring quality for most adult education students. To make progress, a learner has to first be willing to try to understand some math. In the past, that meant a teacher, like myself, would write out or sometimes draw information on a piece of paper or the board. Then, the student would practice in a workbook. This method works best for students who have strong linguistic and mathematical skills. For students with LD, the usual words-only explanations are difficult. For ADD students, repetitive paper and pencil drills are not productive methods. Students like Cathy and Gary were highly distractible, which meant that they had difficulty focusing. Giving hands-on choices allowed them to use their bodily-kinesthetic energy to understand or practice mathematical ideas. Working on a team or in a group often meant their interpersonal skills kept them focused on the task.

Someone like Ted who had good mathematical skills still needed to practice those skills to do better on the test. The Choose 3 activities allowed him to use his other strengths, like his understanding of musical notes and graphing, to remember new ideas like proportion. All three of those students were math test-ready by the time they left the program.

Other GED Subjects: Arts & Literature, Science, Social Studies

GED topics arts & literature, science, and social studies are tested through reading comprehension problems. Theoretically, little previous knowledge or understanding of the topic is required to come up with the correct answers, which are always embedded in the text. However, working in those topic areas helps students become familiar with the related terminology and comfortable with the subject area. It is also important that students practice the testing format, that is, reading passages and filling in answer "bubbles." Therefore, a combination of reading and understanding the subject area along with test-taking practice is the best preparation for each GED test.

For my November 4, 1997 session I made a packet of poetry readings from the Arts & Literature section of the GED workbook, including related GED questions. I knew from past complaints that the workbook readings would not be greeted enthusiastically, quite the contrary. So I got out the Koosh Ball Slings and 1-5 targets. Although I favor "choice" activities to review or learn about a particular topic, my students needed to practice answering multiple choice questions. It is for that purpose that I developed the Koosh Sling Activity.

Given the high energy and distractibility of many of my learners, a multiple choice practice activity that required individual reading, group discussion, and a physical tension breaker would work better than trying to get individuals to just read and check their answers alone. Yes, it absolutely was a reward for doing the hated test practice. What I think made it palatable was that students were not punished for trying to answer, that they had the camaraderie of the practice time, and that there was a physical activity that was humorous and released any tension caused from making mistakes.

Because this class was a pretty social, talkative group I thought they might like reading together and having a little competition to shoot the Koosh. There was a lot of laughter during the Koosh Shoot. We completed four readings and related questions. By the end of the second question Jane was not liking the reading part, but she did continue, albeit reluctantly. Terry had a hard time getting most of the answers, but she seemed more willing to keep going. The rest of the group continued on. (MR/TL/SW Nov. 4)

On November 13 students participated in the Choose 3 Planets activities. In this case I wanted to focus on giving students experience in the language and content of this topic. In both the morning and evening sessions, students chose a range of activities, including: figuring out distances between planets, drawing planets' comparative sizes, making aliens that could survive on particular planets, and reading different books and writing down basic information about the planets. In response to my asking what had helped students with the material, they replied:

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-looking at the charts that showed the positions of the planets
-it was all interesting.
-planets poster
-information I shared about the planets

Through their actions and words, my students repeatedly demonstrated that they wanted to use their intelligence strengths to understand and review what they needed to learn. After each Choose 3, the class would do GED workbook related material. I noticed that students began to use fewer delay tactics and needed fewer explanations when I handed out workbooks and related assignments. In the past, I sometimes felt like I had to give a lecture on the topic before anyone could begin, and even then it didn't help many students. Now, because each student had studied the idea from their own strength area(s), had seen and heard what everyone else had done, and had gotten some verbal and/or written information from me, they had a broader base to help them do the workbook exercises.

Because students needed practice with maps as preparation for the GED Social Studies test, I created the Lost Island Map Activity.(MR/TL/DL/SW Dec 2) I started the morning class with a discussion about why we need maps. Our conversation then moved to "things on the map that tell you information." After this review discussion, I handed out the Lost Island sheet which everyone read and I elaborated with oral instructions.

figure 10 Lost Island Activity

LOST ISLAND MAP

You've been shipwrecked on an island for months. It is a big island. It has a hut you built, a garden you planted, and no other people. You realize that if someone lands on the island, they may not realize you are there, so you make some maps to place around the island.

DRAW THE MAP BELOW:

After students drew the maps I asked that they explain why they had drawn it the way they did. As we went from student to student I asked them to describe their maps and which items on the map would help searchers rescue him/her. This discussion helped students key into the nature and purpose of map items.

After drawing the maps, we looked at commercial maps to learn more. I handed out a map for each person. I asked, "What on the map tells you how to understand it?"

Mary: "The route numbers."
Jean: "The Key."
I asked, "What else tells you information?"
Ted: "Scale. Gray. The letters and numbers pinpoint where you're going."
Jane: "Longitude and latitude."
I say, "That is on national and world maps; what are these lines called?"

Ted: "Grid."
I ask, "What does a grid do?"
Ted: "You pinpoint things."

Then we practiced using the grid to find streets.

Although the GED is a test of reading comprehension as opposed to mastery of a subject area, there are general areas of information that, if known, will help the reader figure out the answer. In the Social Studies Test, there are questions that require map reading skills. By making a map, looking at other students' maps, and finding the significant parts of a published map, learners practiced reading and understanding the map information they would need for the test. Students also got to share knowledge through their strengths. This gave everyone a chance to see and perhaps understand the information in several ways. In effect, students benefited from everyone's strengths as they prepare for testing.

Finding 4: The most appropriate applications of MI differ depending on where students are on the GED preparation "continuum."

As should be clear at this point, I learned that in a GED preparation context, there is a benefit to MI-informed curriculum, to using a range of ways into content, and to giving students opportunities to approach content through areas of strength. However, over the course of the study I learned that there is also a balance that needs to be maintained between using a range of MI-based entry points across a theme like "Angles" or "Measurement," and honing in on students' particular test-preparation goals. An understanding that students will need different types of activities at different times is already embedded into my approach, by way of "warm up," "whole class," and "Choose 3" activities. But I also learned that individual students' needs change as they prepare for the GED.

GED preparation can be seen as a continuum. Early in the continuum, students -specifically ADD or LD students- are best served by giving them opportunities to learn material in many ways, especially ways that make the most sense to them. But when students are approaching that time when they are "test ready," they need to focus their attention on specific content areas and on test-taking skills.

Over the course of my study I gained (and continue to gain) insight regarding when and how to use MI-based, specifically Choose 3, activities in relation to this GED preparation continuum. My realization that there was a time to quiet the MI tone of the class, and modifications I made to my approach in response, represent the beginning of a probe into when, where, and how one uses MI to help students prepare for the GED. For example, I recognized that when I designed a Choose 3 that covered a broad general area, I could be less sure of everyone learning the specific area they needed to learn. And as students honed in on specific test areas, I was even less sure that the Choose 3s I offered covered the specific areas students needed to cover *enough*.

For example, early in October, Terry participated in the Choose 3 Measurement activities by writing and measuring her body. Later Terry reported that she had not learned about feet and inches. Although I reminded everyone that it was important to choose activities that related most to what we needed, I wondered if I had included too many different measurement ideas on one Choose 3 sheet (MR/TL Oct 9).

In November students responded to the Planets Choose 3 as including too much information and made comments like, "It would be easier to look at one planet at a time." In my own Teacher Log I wrote, "I also observed that this was a lot of information to cover in one sitting. Students only had time to give the quickest look to the materials. Unlike the morning class, the evening class did not say anything about that fact; however, I could see that the books and packets were not read in a thorough way." (MR/TL Nov 13)

Some observations affirmed the value of narrowing the content of my MI-informed activities and honing it in even more to students' specific needs and goals. The Lost Island Map was such an example. I reflected,

> *I liked that this class was not rushed or overwhelming. Everyone could finish the assignment. Each person applied some different map skills to their drawing. Ned had a Key, Jay had a scale, Lynn had arrows to follow, and Cathy had X's to follow and a clear pictorial map. (MR Dec. 2).*
>
> *I liked that everyone could complete tonight's activity and learn the basics on maps. It was just an introduction, but that was better than too much information and no certainty about what anyone learned. (MR/TL Dec. 11)*

This rich, hands-on activities offered several entry points but focused on relatively specific learning goal about using maps. I also narrowed the content for the Choose 3 Angles activities. Students felt that the activities had helped them learn or review material they needed for the GED. After the Choose 3, they all went into the Math GED book to do some of the practice on angle problems[Math]. Everyone seemed to do that easily. I got asked a few clarifying questions, but for the short time left, the class focused on the workbook problems. (MR/TL Dec. 11)

My reflections on this activity included:

> *I think that working on one smaller area of math made this lesson less overwhelming. Everyone could complete it and learn about that one math concept. (180 degrees is a straight line that can be divided into two angles that equal 180 degrees.) Cathy and Lynn got to review something they had just started learning in the workbook. Ned focused on one topic and did learn the math concept. MR/TL Dec. 11)*

I found that students who were close to being ready for a particular test wanted to spend all their time on that. When students did Choose 3 activities on a topic they knew well, they were bored, and needed to switch to something else. My related reflections included,

> *I've gotten a clear message from Cathy and Lynn that activities other than math are not useful to them at this time. They are getting close to being ready for a particular test (math) and they don't want to be distracted from that work.*
> *(MR/TL Dec 2, the Lost Island Map)*

> *Gary did draw [But] what he really needs is a class to just practice his writing, which is the only GED test he isn't ready to do. Some time in January there will be another class at the same time at this site. Students who are ready for any test will be in the other class for those subjects. That might work for Gary. (MR/TL Dec 9 Lost Island Map)*
>
> *As these "clear messages" came in from students, I continued preparing more focused Choose 3s. For example, when I had asked students what they wanted for Choose 3 themes, they requested math, especially math from the workbook pages they were doing. Cathy and Lynn had been working together and making steady progress by reviewing areas they had previously covered and slowly moving on to new math areas. I put together a Choose 3 on the section they were practicing: perimeter, area, volume. (MR/TL/SW Nov 4)*

My understanding of when and how, and which, MI-informed lessons work best with learners, particularly my ADD and LD students, continues to grow as I continue to use MI practices in my classroom.

Reprise: Cathy, Ned, Jane, and Ted

Cathy. During Choose 3 activities, Cathy would frequently choose to use Playdoh or Legos. She seemed to remember better from one class to the next if she had interpersonal and spatial experiences. When practicing math, she always had a partner (SW). Over the subsequent months she made slow but steady progress with mathematical concepts using Spiral Math[5] and participating in all the Choose 3 lessons related to math. In March Cathy passed her GED Math test, began practicing for her other tests, and as of May 1998 was ready for her Literature and Arts and Social Studies Tests.

Ned. Looking back at Ned's participation in each of the Choose 3 lessons, I saw that he read and produced more on those days than when he had just writing or workbook activities. My January 22 Teacher Log included the following entry:

> *Ned showed me what he had done [for the Choose 3]. I asked him to write about how painting and writing were similar. He sat and sat and didn't write. I suggested a list, but he didn't do it. He talked about other things. So then I asked him to tell me how painting and writing were similar and he said, 'Expression. Freedom of expression. Some people might find it easier to write it out in words rather than say it. If they are in a good mood or depressed they might write or paint it. It's a form of art.' At the moment that we talked about the activity, be it writing, planets, angles, or punctuation, I could tell from Ned's words that he had learned something about the subject. (JN 22-TL)*

Although in Ned's case I was unable to see much progress, his attendance was good compared to former non-MI class students. Compared to Arthur and Brett of the non-MI informed class, he was actually in the classroom longer. (Arthur, who has more attendance hours than Ned, actually never sat longer than five minutes, nor did more than four questions during a whole class). I noticed what he most liked to do was draw or paint. Ned rarely transitioned into the GED workbook activities. His writing did improve slightly.

Jane. Although initially very reluctant to do the GED workbook or writing activities, over this class year Jane improved dramatically. However, after Choose 3 lessons like measurement, punctuation, painting/writing, and time zones, Jane did the workbook or writing assignments. Her initial reluctance to write and inability to write a long, sequential, clear piece changed. She became more willing to write and spent more time practicing. Her writing became more complete, logical, complex, and detailed. When Jane began writing, her pieces were only twenty to fifty words in length. By the end of the class year, her writing reached the two hundred word length required for the GED.

Toward the end of the school year, Jane began doing more of the workbook math after we reviewed the theme and did a Choose 3 lesson. At this time, I would refer to Choose 3 math activities she or another student had done (like making proportionate figures) to help her figure out the solution. She stopped making negative comments about her math ability and, instead of taking a lot of breaks at math time, sat at the table for the whole practice period. By May 1998 she was test ready in both writing and math.

Ted. When Ted participated in the Punctuation Play activities he drew picture representations of punctuation marks that were humorous and showed he knew their meaning. (MR-NV 13) In January Ted and his partner announced that they would be leaving to go to work. Ted had participated in most of the Choose 3 math activities, done some of the follow-up math workbook activities, and had learned enough of the GED math to take that test. His writing had improved, but he would need much more practice to pass the test. (TL-JN 6)

CONCLUSION

When I look at this data, one of the things I see is the interrelatedness among students' positive response, attendance, and progress. The relationship between students liking their class and having good attendance in that class was evident in students' words and actions in the MI-informed classrooms. Simply put, they came to class because they were engaged in the learning activities and felt the MI-informed work was helping them progress in GED preparation. Student progress was also connected to the frequency of attendance and participation in the learning activities. From these connections I have come to believe that if students come to class and are engaged in learning activities, then they are more than likely progressing in their studies.

I believe that these findings are a hopeful indication that we can teach GED preparation and engage some hard to reach, ADD/LD, students by tapping into their areas of strength. I found that MI theory was an extremely useful tool to inform GED lessons in a way that was inclusion of a range of possible strengths my students brought to class. MI-informed lessons allowed students many possible ways to understand the material, including their own particular strengths. For students who learn differently because of learning disabilities and/or attention deficit disorder, this type of education is especially valuable.

In my research I found a general relationship between tapping students' diverse strengths and positive student reaction, improved attendance, and progress in GED preparation. Over the course of the project I created activities that made links between specific intelligences and the material to be learned, for example spatial and linguistic means to help students understand Proportion or Angles, bodily-kinesthetic means to learn about time zones, and so forth. My next steps, (or the next steps of someone using this research as a stepping stone to further research and practice) might be to consider what other MI approaches and/or activities could help students with severe ADD/ADHD reach their educational goals. For example, would more intense musical or bodily-kinesthetic activities help an ADD/ADHD learner learn to read or pass a GED? What are the specific strategies, or "bridges" from intelligence to material, that seem to work in keeping ADD/LD students in the classroom, engaged in the material, and making progress on GED preparation? I believe everyone can use their strengths to accomplish their goals.

APPENDIX ONE
GED TEST INFORMATION

Test Content:	**Questions**	**Time Limit**
Writing Skills Part 1 Grammar	55	75 minutes
35% Sentence Structure		
35% Usage		
30% Spelling, Punctuation, Capitalization		
Writing Skills Part 2 Essay	essay	45 minutes
Social Studies	64	85 minutes
25% History		
20% Economics		
20% Political Science		
15% Geography		
20% Behavioral Sciences		
Science	66	95 minutes
50% Life Science		
50% Physical Sciences		
Interpreting Literature and the Arts	45	65 minutes
50% Popular Literature		
25% Classical Literature		
25% Commentary on Literature and Arts		
Mathematics	56	90 minutes
50% Arithmetic		
30% Algebra		
20% Geometry		

APPENDIX TWO
DIAGNOSTIC CRITERIA FOR ADD IN ADULTS

From Driven To Distraction by Edward M. Hallowell and John J. Ratey

NOTE: Consider a criterion met only if the behavior is considerably more frequent than that of most people of the same mental age.

A. A chronic disturbance in which at least fifteen of the following are present:

1. A sense of underachievement, of not meeting one's goals.
2. Difficulty getting organized.
3. Chronic procrastination or trouble getting started.
4. Many projects going simultaneously; trouble with follow-through.
5. Tendency to say what comes to mind without necessarily considering the timing or appropriateness of the remark.
6. A frequent search for high stimulation.
7. An intolerance to boredom.
8. Easy distractibility, trouble focusing attention, tendency to tune out or drift away in the middle of a page or conversation, often coupled with an ability to hyperfocus at times.
9. Often creative, intuitive, highly intelligent.
10. Trouble in going through established channels, following "proper" procedure.
11. Impatient; low tolerance for frustration.
12. Impulsive, either in word or action, as in impulsive spending of money, changing plans, enacting new schemes or career plans, and the like.
13. Tendency to worry needlessly, endlessly; tendency to scan the horizon looking for something to worry about, alternating with inattention to or disregard for actual dangers.
14. Sense of insecurity.
15. Mood swings, mood liability, especially when disengaged from a person or project.
16. Restlessness.
17. Tendency toward addictive behavior.
18. Chronic problems with self-esteem.
19. Inaccurate self-observation.
20. Family history of ADD or manic depressive illness or depression or substance abuse or other disorders of impulse control or mood.

B. Childhood history of ADD.

C. Situation not explained by other medical or psychiatric condition.

APPENDIX THREE
LEARNING DISABILITIES CHARACTERISTIC IN ADULTS

1. Significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities.

   -- Despite years of school attendance has difficulty or can not read, write, and/or solve logic or math problems.

2. Overall lack of organizational skills.
   - Inability to see relationships
   - Inconsistent and unpredictable application of concepts
   - Difficulty performing a logical series
   - Difficulty prioritizing

3. Poor memory
   - Unpredictable recall performance
   - Difficulty memorizing for a test
   - Can't remember what is heard and/or what is read
   - Can't remember over time
   - Has trouble following multiple instructions

4. Processing problems
   - Visual: reading or copying from board or text
     poor spelling especially non-phonetic words
   - Difficulty adjusting to change
   - Difficulty following oral or written instructions
   - Coordination/balance: walking, using tools, writing

5. Interpersonal skills
   - Interacts inappropriately with peers and/or teachers
   - Upsets and irritates others
   - Trouble with following rules
   - Not aware of consequences of actions

6. Psychological processes
   - Rigidity: can't change routine
   - Impulsivity: speak or act without thinking
   - Concreteness: difficulty with abstract ideas
   - Perseveration: Stays on task beyond appropriateness
   - Distractibility: Can not maintain focus

Jean A. Mantzaris

ABSTRACT

Jean Mantzaris' research focuses on how students' awareness of and participation in MI activities will affect their career choices. Consequently, she infuses her career awareness class with MI-based activities and invites her students to explore their multiple intelligences. For example, in an effort to "dig deep" into each students' intelligence profile, Jean asks the students to reflect on the activities they loved to do as children and to bring representations of these activities into class. She then invites students to consider a possible connection between their childhood preferences and the intelligences they had identified in the class as adults. Through this and other MI-based activities, students become more aware and appreciative of each other's strengths. Jean also observes a "notable increase in student engagement, motivation, camaraderie, and persistence."

Analysis of student comments and their plans for next career steps leads Jean to conclude that awareness of their own intelligences influences students to broaden their career decision-making to be more aligned with their intelligences. "Once students became aware of their strengths, possibilities of new careers abounded." This more complex understanding of their own strengths and the career possibilities that might best correspond to them results in students extending their career exploration rather than identifying an immediate job choice. This proves to be a double-edged sword and hence a concern for Jean as welfare mandated students are under pressure to take any job.

Jean A. Mantzaris

RESEARCH QUESTION

I began my MI journey with a myriad of questions:

- What will Multiple Intelligences theory have to offer the field of career counseling, especially as it pertains to basic skill and high school diploma learners?
- Will knowledge of MI theory affect students' career choices?
- Will certain careers manifest certain intelligences?
- Can we find a good fit when we know student intelligences, and those required in certain careers?
- Can MI activities be devised to help students in career planning?
- Will an MI approach to career planning enable students to choose training and careers that they will be successful in and satisfied with?

My final research question became:

How will adult diploma students' awareness of their own intelligences and their participation in activities informed by MI theory affect their career decision-making process?

How will adult diploma students' awareness of their own intelligences and their participation in activities informed by MI theory affect their career decision-making process

RESEARCH CONTEXT

Wallingford Adult Education serves approximately 500 ABE/GED, Credit Diploma, and ESOL students per year. We have two locations, one of which is the historic Wallingford railroad station, where day and evening classes are held. Wallingford is a growing industrial and commercial community, 13 miles north of New Haven and has appreciable acreage devoted to agriculture. It has a growing immigrant population, with a significant number of Mexicans.

Our students left the traditional school system for a variety of reasons. Many felt inadequate, and school was not a favorite place. Others lacked "motivation" or had personal or social obstacles that interfered with their educational process. Most students are employed at minimum wage jobs or receive benefits from welfare, disability, or unemployment. Some are referred to our program by the court system. Often these students are also supporting young children. An essential element of their high school diploma education at our Learning Center revolves around choices for future higher education, which includes career specific training.

Working as a Guidance Counselor with adult learners in adult education and at the community college level involves a substantial career development component. Choosing appropriate careers entails obtaining information regarding one's abilities, interests, and values, as well as information about specific careers and the necessary training involved.

My main concern is that students come up with a career that is a good "fit" for them. Most ABE/ GED students have little time or money, and many have family commitments. These factors do not usually allow for a choice of leisure learning or extended formal education. Wallingford Adult Education students who have returned for a high school diploma are generally enrolled less than one year before receiving their diplomas. There is pressure to make the right career choice because of life circumstances and also welfare reform which is causing people to lose their welfare benefits within short time spans.

EVOLUTION OF MY WORK AND THINKING

Entering the AMI research project during its second year of operation, I felt pressured to "catch up." I began my journey as a rather traditional learner who might be described by Howard Gardner in the *Unschooled Mind* as a "person who seeks to master the literacies, concepts and disciplinary forms of school" (1991, p. 7). I responded by reporting back facts and concepts. Kegan would probably have described me as a combination Instrumental Learner who "gets it" and is "in possession of it" and a Conventional Learner who asks "What do you think I should know?" (1994).

As an Instrumental Learner, I "got it" and was "in possession of MI knowledge." As a Conventional Learner, I was thinking about what I needed to know in order to meet the expectations of this new AMI group. With that in mind, I devoured Gardner's *Frames of Mind* and felt confident that I could pass a university examination with an acceptable grade.

There was, however, a nagging voice in my head that kept asking "What do *I* want to know? What is important for me as a guidance counselor? How can I use MI to grow as a counselor and assist in the growth of my students?" I was looking to become a Self-Authoring Learner. I wanted to challenge my own assumptions and broaden my vision with new ideas.

A breakthrough came when I read Earl Shorris' article "On the Uses of a Liberal Education as a Weapon in the Hands of the Restless Poor" (1997). Shorris expressed his belief that numerous forces such as hunger, isolation, illness, drugs, crime, etc. keep the poor from being political and that the absence of political awareness keeps them poor. He asked V. Walker, an inmate at Bedford Hills Correctional Center, "Why do you think people are poor?" He had listened to hundreds of people in the past and believed there would be no surprises in the answer to his inquiry. Walker replied, "You have got to teach the moral life of downtown to the children. And the way you do that, Earl, is by taking them to plays, museums, concerts, lectures, where they can learn the moral life of downtown" (p. 50). Walker never spoke of jobs or money. She felt that in order for the poor to enter the public world and practice the political life, the poor had to learn to *reflect*. That is what Walker meant by the "moral life of downtown."

This powerful essay struck a chord inside of me. I had been so focused on the "right fit" in the career decision-making for my students, and so pressured by their need to get jobs and money, that I missed the discovery process that my students and I had to go through. My own vision of career decision-making was broadened. I realized that decisions have many paths, and we must explore many options. There is not necessarily one "best" decision. We have to be open to new perspectives and challenge old assumptions.

It was at this point that I began reading about "learning for understanding," described by Gardner in the *Unschooled Mind*. Gardner emphasizes the use of apprenticeships, job shadowing, and on-the-job training as a means to reduce the gap between the agenda of school and the agenda of life. I was aware that most of our students had low-wage jobs and shared a narrow understanding of their career possibilities.

I was also inspired by T. Armstrong's *7 Kinds of Smarts* chapter on awakening the intelligences that didn't have a chance to develop. I decided that it would be a good idea for students to examine their childhood strengths since children exhibit their strengths in a very natural manner before they have expectations or rewards and are aware of the consequences. Students could then see if those strengths still flourished in themselves or perhaps needed to be nourished. A friend suggested reading Maya Angelou's *I Know Why the Caged Bird Sings*. This is a poignant portrayal of Angelou's journey from a mute child (her voice is literally lost) to the poet and linguistic genius she later becomes. I knew I was onto something.

METHODS

Eleven students, who were simultaneously enrolled in an ABE/GED multi-level, individualized class, participated in a 12-week career development module during the 1998 spring semester. The module consisted of activities inspired by MI theory. Three of the 11 students participated minimally because they completed their diploma preparation early. Six students participated in all activities and two participated in most activities. The participant demographics are as follows:

Male	5		Age 16-21	4
Female	6		Age 21-32	3
			Age 32-45	4
Native Born	9			
Foreign Born	2		Caucasian	10
			Black	1
Court or Welfare Mandated	3			

- Counselor/student interviews
  All students participated in two or three counselor/student interviews in which I asked them about their possible career choice, their strengths, what they are "good at," and a "dream" or "wish" career.

- Self-Assessment
  All students assessed their intelligences using an instrument developed by Meg Costanzo, an AMI project member. The Costanzo instrument was chosen because it is a multi-dimensional model with an appropriate vocabulary level for our students.

- Class Profile
  A class profile was developed to show a composite of the students' individual MI self-assessments, but I did not do much with this profile during my research.

- Harrington-O'Shea Career Decision-Making System
  All participants completed the Harrington-O'Shea Career Decision-Making System. This career inventory, commonly used in adult education, has several reading levels and is available in Spanish.

- Observation
  I observed students participating in MI-inspired career decision-making activities. Silja Kallenbach, the AMI project co-director, videotaped and observed my class twice. The students' ABE/GED teachers observed any noticeable changes in students in their regular class sessions and wrote anecdotal reports.

- Student Journals
  Students kept journals, and occasionally I commented in writing to each student about his or her journal entries.

- Student Feedback
  Together, the students and I directed and planned our approach to MI-inspired classroom activities. At the end of each class, students commented in writing on the lesson and gave feedback. All students learned about the eight intelligences through my presentations and assigned readings. To demonstrate that knowledge, they performed a "show" for ABE/GED teachers portraying several of the intelligences, allowing teachers to comment on their understanding of MI theory.

FINDINGS

Findings

- Students broadened their career decision-making to be more aligned with their intelligences.
- Students demonstrated increased respect for diversity.
- There was a notable increase in student engagement, motivation, camaraderie, and persistence.
- Students became more self-directed

Finding 1: Students Broadened Their Career Decision-Making to be More Aligned With Their Intelligences

My students and I learned that career decision-making is a journey with many paths to explore which may not necessarily lead to one "best" decision. The students moved from considering standard career choices – those that students are familiar with such as certified nurse assistant or food service worker – to considering their own strengths and related career possibilities. Thinking about themselves in light of MI theory caused the students to challenge their own assumptions and broaden their vision of career decision-making.

Six students had previously completed a Harrington-O'Shea Career Decision-Making System (CDM). Two of the six students had a "flat" profile with no peaks or valleys. (The interest inventory asks about a person's likes and dislikes related to a long list of job activities, and these are scored against six major work settings. Often a flat profile results when students do not express an opinion about their likes and dislikes related to careers.) It is not uncommon for adult education students to exhibit a "flat" profile, and I believe that is because many students have not reflected on their likes and dislikes.

On their individual MI profiles, students had marked high and low points. Students expressed a belief that the CDM didn't "carry the punch" that the MI assessment did. They believed the CDM to be more external and the MI assessment more internal. By this, I think they meant they could relate better to the questions on the MI survey.

One of the first MI-based classroom activities we did centered around reflection on childhood intelligences. Students were asked to "go back in time" and reflect on activities they loved to do as children. They were asked to bring representations of these activities into class – favorite stories, games, photos, etc.

Two students shared childhood photos during the reflection activity. John shared a picture of his first Halloween. He commented on how much he enjoyed pretending and still does. Kimberly talked about taking things apart and putting them together, something she still enjoys today. Eric talked about a childhood among adults, and how being a clown in school got him in trouble. He thought broadcasting might be something to explore. At the end of class, John remarked that his childhood is something he does not often think about but maybe should, as his imagination could make anything out of nothing. This evidence shows that reflection on childhood is an important part of the career decision-making journey.

After sharing favorite childhood activities with each other and having time to "play," students reflected on whether these favorites were connected to present favorite activities or strengths, or whether there were some they wished to pick up again or strengthen. Students looked to see if there was a link between their adult and childhood intelligences and explored why childhood intelligences withered or flourished. They then examined careers in light of their manifested (or not) childhood and adult intelligences. Each student made a key chain ornament to depict a strength or intelligence he or she would like to nurture.

Students were asked to write in their journal after each MI-inspired activity and comment on what they learned that day. Journal entries after the "Introduction of MI" lesson and the MI Assessment activity included:

> ***Steve:*** *"This stuff is fun, but more than that it shows you how many people around you are smart in many ways and so am I."*
>
> ***Eric:*** *"Like it woke me up. I thought it was enlightening. I came in with a poor mood but this picked up my spirits."*
>
> ***Julie:*** *"It shows how all the intelligences are everywhere in the world today and when we appreciate them, we can get along and accomplish a lot."*

When students moved to a study of Connecticut Career Clusters – eight areas of careers that drive Connecticut's economy (see attachment) – they began to look at these careers in light of multiple intelligences. They began to tease out the strengths or abilities required by careers in certain clusters. One student saw how a natural resource manager needs math-logical strength to study chemistry, physics, and math; linguistic strength to express concerns verbally and in writing; kinesthetic strength for field work; visual/spatial strength to look for clues in the environment; interpersonal strength to accept recommendations; and intrapersonal strength to reflect on findings and to make ethical considerations. Another student for whom business and finance may not have had any appeal before, viewed his strengths as math/logical and musical and began to think about a business career in the recording industry. Yet, another student with linguistic strength and no known career objectives described how his quick tongue – a source of trouble for him in school and with the law – might be an asset in the broadcasting industry.

The students also began to consider the paths to higher education and the necessary financing. Upon my suggestion, they developed a monopoly-style board game where one gains entry into the career choice cluster by earning educational levels and acquiring "chance" cards for scholarships, day care, federal aid, etc.

I did interviews at the beginning and end of the career development module. During the pre-interview of the eight students who participated in MI-informed activities, four indicated they were fairly certain about possible careers, two had no idea, and two were concerned about possible jail time rather than future careers. In the post-interview, only one student remained certain of career choice.

Once students became aware of their strengths, possibilities of new careers abounded. From their perspectives, there was so much more to explore. They were allowed to dream. This allowed a decision of "no choice" to be seen in a positive way. Three students changed their "almost certain" career choice and decided to enter community college to explore different areas of study. The two who worried about serving jail time now made plans: one to attend a community college and the other to attend the state university. For the three court or welfare mandated students, the changes were significant. All three filed college applications and Free Application for Federal Financial Aid

(FAFSA). For one student, that took particular courage since her welfare benefits were ending and she faced opposition from family members.

Perhaps one of my most eloquent of the student journal writers, John, sums up our MI journey in career decision-making:

> *"Our past experiences shade our view on life... my glasses were somber and obscure, tainting everything that flittered through... Then unexpectedly the world around me changed. The air gave birth to new sounds and smells. The land filled with colors I had never seen... I had unconsciously changed my glasses. New dreams and desires danced through my mind. Words like "college," " career," and "future" introduced themselves into my vocabulary..." [John, 2/11/98, Journal]*

Divergent Cases

In doing interviews at the beginning and end of the career development module, I found that there was no change in plans for the three students who participated minimally in the program. All three completed diplomas early in the spring semester, and none had any future career plans when they departed. It appeared they had come for their diplomas and were now leaving without considering possible new career choices. All three held low-paying, entry-level jobs. They did not express any thoughts about a possible career – a question in their pre and post interview. I believe that because those students had not become aware of their intelligences and had not examined careers in the light of their own intelligences, they were not disposed to viewing new career possibilities for themselves.

Finding 2: Students Demonstrated Increased Respect for Diversity

The theme of respect for diversity flowed throughout the journals. As students were recognized for their intelligences by me and each other they began to use each others' strengths when confronted with a project or concern. For example, they looked to each other when presenting MI to their teachers and when making the career board game.

In a student journal entry, Steve writes, "I liked the way Kimberly got us started by suggesting we write a poem. I appreciate his gift for writing and John's ability to organize us. Until we had this class, I really didn't know or appreciate anyone's strengths and looked at these guys (Kimberly and John) as hip-hop and left-over sixties kids." Kimberly commented, "Sitting in adult ed... even though life isn't fair... I now care about everyone sitting around me. I'm learning to meet people different from me and they are what they claim to be and more."

In our Learning Center, students generally work on an individual basis with teachers. We have open enrollment with instruction planned according to the student's goals and a CASAS assessment. Age, life experience, and ability level varies a great deal. It was with this in mind that individualized instruction became a model at our Center.

Finding 3: There Was a Notable Increase in Student Engagement, Motivation, Camaraderie, and Persistence

In this semester of MI-inspired career decision-making, I was struck with the realization that our students are isolated at our Learning Center. This was the first time students participated together, and this participation was remarked on, not only by myself, but also by the students themselves and staff. ABE/GED teachers commented on how energized the students were becoming. There was a notable increase in student engagement, motivation, camaraderie, and persistence. The students talked more openly with each other and with the teachers. Quotes taken from student journals commonly reflect this feeling. Kimberly remarked, "This [MI activity] releases stress and opens my heart and soul." Julie remarked, "I'm struck by cohesiveness and harmony and what we can get done." Beth said, "This wakes me up and picks up my spirits."

My students' teachers said that these students asked more questions and helped each other in class. For example, two students helped tutor two other students who were not going to complete requirements before graduation on June 3rd. One student made it in time. The other student, who staff believed would never continue, finished over the summer.

Finding 4: Students Became More Self-Directed

My exposure to MI led me to appreciate the variety of students' strengths. As a result, I changed my teaching approach to explicitly foster different intelligences. That meant I couldn't hold onto the linguistic way in which I had presented lessons in the past. Once I started to diversify my lesson plans, I began to look to the students for more input.

As time went on students took over decision-making for activities such as the career "board game." For example, they wrote all the "chance" cards for the game. Their ideas were quite different from mine in that they focused more on the kinds of assistance they would need, whereas I would have included some luxury items such as a trip to a warm island, new car, jewelry, etc. They added two new squares: on-the-job training and Ph.D. programs. They developed the MI "show" for teachers on their own. I became a guide and participant in these activities designed by the students. As Julie commented, "It was a lot of fun and showed how much fun a bunch of people could accomplish if they got together."

The course graduates also led an activity at a dinner prior to graduation. They had suggested a performance of intelligences for the graduation ceremony in place of usual speeches. They talked about multiple intelligences and some of the activities they had done in the course. They then asked other graduates to describe what adult education meant to them by naming a favorite song or using visual references or words. I believe that the kinds of choices they presented to their peers reflected their learning experiences in the MI career planning course.

My own journal reflects the changes that were taking place in me and my students. ABE/GED teachers and I commented on students' increased involvement with each other and appreciation for each other. In one journal entry (1/28/98), I note that "bonds of trust and mutual respect are developing." Students seemed to become more independent learners. In another entry (3/25/98), I comment, "Students armed with knowledge and appreciation of their own and others' strengths are able to finetune requirements of careers and create learning experiences that enhance the career decision-making process. They become the center." I believe the trust and respect laid the necessary foundation for students to take more control in the classroom.

In the end, I think the students' consideration of and commitment to higher education and new career possibilities was influenced by having more control in the activities.

NEW QUESTIONS, NEXT STEPS

My MI study was one semester of twelve classes with a limited population. While my findings are very promising, the application of MI theory in career decision-making should be studied for a longer period of time and with more students.

One concern I have is the decision some students made to continue to explore career options at the community college or state university. Some of these students faced opposition from family and outside agencies providing temporary funds. I plan to do a longitudinal follow-up because I am very concerned about their struggle and what happens to them. If exploration leads to nothing, it hasn't served its purpose.

Another potential area of study would be to include an apprenticeships module whereby students could "try on" careers. It would be interesting to see what intelligences students identify as useful in these career "try-ons" and whether or not they possess them or wish to develop them. When I talk about apprenticeships, I'm not necessarily referring to union trades-type apprenticeships, but to a more cooperative type education employed in high schools and especially universities where you are assigned to work in an area of choice with supervision and evaluation. I hope to begin this in the next academic year.

Another area that should be addressed is the need to include group instruction in the individualized instruction setting of our Learning Center. In the March 1998 issue of *Focus on Basics*, devoted to learner motivation, Michael Pritza writes how a shift from individualized instruction to group discussion can increase student retention and participation. Based on the impact of our MI-informed group activities, I believe his conclusions are valid and worthy of consideration. However, it could be the subject of another study to tease apart the impact of the group mode of instruction and MI-informed activities.

My advice to practitioners is to first relate MI to your own life and self, and if it appeals, just jump in. I think it is important to present Gardner's theory in ways students can grasp. Students are impressed with theory and honored to be part of something new. It demonstrates respect for students, and allows them to show and share their strengths with you and their classmates.

Personally, I have always believed that a counselor has and needs interpersonal skills, but it was the growth in the intrapersonal realm that gave me the strength I needed most to effect positive changes in my students and myself. I developed an ability to reflect on my practice and myself. I learned much of this from my students who truly had an ability to reflect when given the opportunity and appropriate prompts and experience. Some were not eloquent writers, but in an atmosphere of trust and belonging, all had the ability to voice what they felt. I could relate to E. Shorris who was surprised by his informants' insights and acumen.

Diane Paxton

ABSTRACT

Coming to the AMI Study with a well-developed and articulated theoretical background, Diane Paxton's challenge is to consider how multiple intelligences theory can inform her teaching in new ways, and in ways that did not interfere or contradict her already well grounded practice as an ESOL instructor.

Like many students, Diane's students initially resisted MI-based approaches, seeing them as unusual, childish, or simply too different from the traditional approaches they knew and had come to expect. Interestingly, and perhaps because of her strong theoretical background, Diane herself resists MI. She finds problematic the notion of assessing students' intelligences, finding something as complex as students' profiles of intelligence too difficult, if not impossible, to assess. Once she recognizes that assessing MI is not prescribed by the theory - in fact, no specific practices are - Diane finds a comfortable place using MI theory as a framework to enhance further her multi-modal approach to teaching English. In the process, students' perceptions change as well. They accept, engage in, and for the most part, become very enthusiastic about multiple and diverse ways of knowing.

Diane accounts for her students' changed perceptions in several ways. First, her students become engaged and enjoy their participation in thematic units and projects that are informed, in part, by MI theory. Secondly, their reflections on their learning activities facilitated by Diane help them recognize and articulate how these new types of activities contribute to their improved English. Diane also notes that displaying project-generated work on the walls helps students recognize the role of this work in their learning English. And developing a trusting environment over time and forming a sense of community is key to students' acceptance and ultimate enthusiasm for the nontraditional approaches in their classroom.

Diane also details some of the contextual factors that support or obstruct use of an MI-informed approach. These include: students' prior educational experience, which shape their expectations; students' socioeconomic background and related investment in the class, and institutional constraints, such as class size and setting.

One of Diane's most significant learnings from the AMI project is the importance of knowing one's own teaching context well and taking a critical approach to the theory or approach in question. In combination, these two elements are key to understanding if and how a particular theory or approach can support one's teaching and learning activities. Diane concludes that MI theory supports good ESOL teaching, and that multiple intelligences theory is a useful construct with a place in her teacher's "toolbox."

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Diane Paxton

RESEARCH QUESTION AND CONTEXT

I began my research in the Spring of 1997 with a beginning level ESOL class. The class, known as "Un Paso Mas," was comprised of elders from the Latino community, 12 students ranging in age from 52 to 72. The students all had in common a low level of first language literacy. Our class was held at Centro Latino, a community center in Chelsea, MA, and met two days a week for two hours each day.

I had been working with half of these students for a year when we began this project, and the other half, for five months. My sense was that their ideas of effective education resulted in an attachment to traditional methods of teaching and learning. They preferred workbooks, dictations, and a focus on grammar, perhaps because of their limited experience with education (only one student had gone to school beyond the third grade in their native countries, and none had studied more than basic ESOL in this country).

My initial research question was: "What effect does metacognitive awareness of their own multiple intelligences have on the perceptions of effective ESOL teaching and learning by students with limited native language literacy?"

I developed this particular research question under the assumption that doing individual MI profiles of students' strengths and weaknesses, as a vehicle to gain "metacognitive awareness" of their own intelligences, would be a key element to interpreting MI theory into practice. Up to the time I began this research I had worked with my students using a mixture of traditional and nontraditional classroom methods. I had found that the traditional classes they wanted generally were not helpful for enhancing their comfort with or communication in English. I was interested in exploring whether a focus on diverse, multiple intelligences-informed approaches to curriculum would help the students practice and acquire English more effectively. In this case, the MI approaches would be designed to invite the students to build on their diverse strengths and life experiences towards understanding and solving problems in English. My research question also was designed to find out if the application of MI theory would help the students appreciate and value a less traditional, more diverse and holistic approach to acquiring English.

What effect does metacognitive awareness of their own multiple intelligences have on the perceptions of effective ESOL teaching and learning by students with limited native language literacy?

What happens when I try to integrate MI into an ESOL class

A funding cut eliminated the first class, requiring me to move my research to a new teaching context. I began to work at Bunker Hill Community College (henceforth BHCC) in their consortium of adult basic education classes held throughout the city of Chelsea. I taught an intermediate level ESOL class (Level 2) that met for two three-hour sessions a week. The students ranged in age from 19 to 50, and all but one were Latino. I had taught only some of the students during the previous summer semester, so I didn't know most of them. However, as with the first group, I knew them to be strongly attached to a class with a grammar and workbook focus.

I developed a second research question that fit my new context and also specifically addressed the application of MI theory in my classroom: "How does experience in an MI environment affect or change the perception of effective ESOL teaching and learning by intermediate level students"? However, as I reviewed my journals and progress report from the first semester, I realized that I didn"t feel comfortable with the emphasis on "an MI environment" in this question. It felt too prescriptive in terms of how I used MI theory. At that time I was struggling with simply looking at my practice through an MI lens, so I didn't want to force a particular instructional framework on myself.

I decided to ask a more open-ended question and explore what would happen if I tried to integrate MI theory into the class, leaving open how I would do that. I wanted to avoid pushing myself into a particular emphasis or interpretation of MI theory. I was still interested in the potential for change of student perceptions of effective teaching and learning; however, I wanted to work with the students in a way that was comfortable for me and for my students foremost. My emphasis was on collecting data to see what the students' responses were to the more and less traditional activities we did in class.

I continued to consider my first research question although I changed its focus to the relationship between students' metacognitive awareness of their own learning and their perceptions of good ESOL practices. I added a second research question to reflect the more open-ended nature of my questioning: What happens when I try to integrate MI into ESOL teaching at the intermediate level?

EVOLUTION OF MY WORK AND THINKING

This section is about the sources and resources that served as catalysts for my evolving work and thinking related to my work with MI theory. These include: my educational and theoretical background coming into the project, introduction of MI theory to my teaching practices "toolbox," journaling, reading and research, and other opportunities to dialogue with colleagues. Together these things helped me to question, develop, modify, and integrate MI practices in my classroom in ways that made sense to me and my students.

I began this project within a year of completing my Masters degree in ESOL Studies at the University of Massachusetts. The UMASS program has a particular focus on participatory education, growing out of the work of Brazilian educator Paolo Freire. My teaching practice has been richly informed by my graduate studies, and I have consciously drawn on them in planning the curricula for my classes during and since the time of my graduate work. Participatory education has been one of my most important goals as a teacher. As Auerbach states (1992),

> In a participatory approach the curriculum emerges as a result of an ongoing, collaborative investigation of critical themes in students' lives. . . Both the content and processes of this model invite learners to become the subjects of their own education. Content centers on problematic issues from their lives, so literacy is immediately relevant and engaging. Because this reality is problematized (presented in all its complexity, without predetermined solutions), participants become the creators rather than the recipients of knowledge. (p. 17)

I am continually struggling with the many challenging issues I find in attempting to integrate, develop, and design curricula to support this approach in my classroom. As a result of my education and the carefully considered nature of my work, nearly everything I do with students is explicitly informed by theory. Aspects of the way I think about teaching and learning, informed by other theories which support effective ESOL, are similar to pedagogical approaches suggested by MI theory. Therefore, when I began my work on this project, MI became one of many theories in my tool box that I used to broaden my thinking about diverse ways to introduce materials to students and to develop thematic units.

If it is possible to cite my own journal writing process as part of the evolution of my work, I will. The journal was the tool that helped my thinking evolve about how to integrate MI theory with my practice. I discovered through journaling that it is important to adapt MI theory to our contexts and to our individual theoretical frameworks which already inform our teaching. To try to put MI theory into practice without reflecting critically on its usefulness and adaptations for our individual teaching styles and contexts will only result in a cookie cutter approach which may or may not do the students good.

For example my early research efforts were influenced by my initial understanding that developing individual intelligence profiles of students was central to applying MI theory. Two sources of information encouraged developing individual student profiles (i.e., description of the student's strengths and weaknesses). They included the comments of Thomas Armstrong, who was participating on an MI panel discussion (1997 TESOL convention), and an AMI Project Institute held in March, 1997. Armstrong, a well-known MI authority, emphasized the importance, benefits, and relevance of assembling individual student profiles. The March institute highlighted MI assessment and the development of related assessment tools.

With this "profiling" interpretation of MI theory in mind, I involved my Un Paso Mas students in reflection and assessment activities that attempted to identify their areas of strengths and that were geared to help them learn about multiple intelligences theory. However, over time and with consideration of my personal and teaching contexts, my student data and related reflections were strongly suggesting that "profiling" was not helpful or successful with my students. It was still early in the project and so the emphasis on profiling was still in my mind; I wondered about the usefulness of the theory for me in my teaching context, or whether I was understanding the theory correctly.

From that point, my thinking about MI evolved. I realized that developing individual profiles was something I neither had nor wanted to continue to do. I stopped assessing for intelligences and concentrated more on assessing students" thinking about their own learning in the class. This was a way to answer my second research question, "What happens when I try to integrate MI into ESOL teaching at the intermediate level?," and it was a way, through reflection/assessment activities, to help the students see value teaching and learning activities that were designed in the spirit of MI and theme based units.

The idea of developing project-based curricula had already been in my mind as a structure which I hoped would help my students develop English skills and also learn critical content knowledge. But I had found it difficult to actually put it into practice. Caine and Caine's (1994), Making Connections: Teaching and the Human Brains reinforced for me the importance of project-based learning:

> Students must be exposed to subject matter in many different ways, a great number of which must be complex, real projects. These projects must be developmental in nature and link work over time. They should assist in connecting content to the world in which the student actually lives. They can generate the sort of conversation and group interaction on which many people thrive. And they can be vehicles for teaching much more than the specific content of any one course, and the comfort and trust that are essential in the classroom for students to acquire and create knowledge. (p. 120)

Two other influences combined during my semesters of research to help me develop thematic units and projects, which represent one of the principal changes in my teaching. One was my research into the ways that teachers have used MI theory to broaden their approaches to content areas. Resources included The Multiple Intelligence Handbook by Bruce Campbell, "The Entry Point Approach Introduction" (Davis, 1996), "Minds at Work: Applying Multiple Intelligences in the Classroom" by Mara Krechevsky and Steve Seidel (1998) and Teaching Through Projects by Goodrich, Hatch, Wiatrowski and Unger (1995). All helped me to broaden my thinking of ways to develop thematic units and integrate creative group projects into the class.

The evolution of my work and thinking about MI theory also was influenced by my reading research, my fellow AMI teacher researchers, and a monthly teacher group at the Harvard Graduate School of Education called the Rounds at Project Zero (RAPZ) under the direction of Steve Seidel. This group features presentations and discussions of student projects and individual pieces of student work. The RAPZ's thought-provoking, energizing atmosphere opened the doors of possibility to project-based thematic units for me. Thanks to these influences and resources, I found new ways to extend the units I developed in my classes. And as one of the many tools in my box, MI theory helped me to develop more rich curricula.

IMPLEMENTING MI

How I implemented MI was of course bound to the questions I was asking about it. Therefore I started applying MI in my classroom from a "profiling" perspective, in order to build students' metacognitive awareness of MI theory generally and their own profiles of intelligences specifically. I used photographs of people engaged in tasks representative of different intelligences to introduce the theory, and the group discussed the related activities and skills in their own lives. Students wrote about their strengths and weaknesses on a handout I provided.

After shifting away from the profiling perspective, I focused on using MI as a tool to develop thematic units and projects. I felt more comfortable developing activities that were "in the spirit" of MI -that is, practices that MI theoretically supports. I considered other ways to interpret MI to help students come to value nontraditional approaches in the classroom. A unit on neighborhoods conducted with the Level 2 (BHCC) group is one example of my implementation of MI theory. This unit extended over 3 weeks and illustrates the type of MI-informed curriculum I worked to develop in both my classes. The unit drew on many of the intelligences, offered multiple entry points through which the students could practice and develop thoughts about both the content area and English. At the same time it built on what they already knew and grew out of a class process with which they were comfortable. Below I outline the unit in chronological order.

NEIGHBORHOOD UNIT

- Open with a handout from Collaborations: English in Our Lives, by Gail Weinstein-Shr and Jann Huizenga (1996). I created the handout by combining teacher and student book pages from a chapter on neighborhoods. I opened with the handout because it has a little bit of many activities, (charts, photos, readings, idioms, dictations and journal writing) and the material is accessible to students at diverse levels.
- Students looked at pictures of neighborhoods from my picture file and talked about them in pairs.
- We read "In Roxbury, a Conversation," from Neighbors Talk," edited by Rachel Martin (1993).
- Students role-played the characters.
- In groups of 3-4 students drew on newsprint with magic markers and colored pencils. They could either draw 3 things that are different about neighborhoods in the US and the Dominican Republic (based on the conversation in the text), or they could draw 3 things that the women in the story could do in their lives here to feel more comfortable.
- Students presented their drawings to the class.
- During the entire process, the students wrote about their own neighbors in their journals, and I responded with comments and questions using a process writing approach.
- We listened to and discussed metaphor in: "In the Ghetto," by Elvis Presley. The students read the lyrics out loud and later did a cloze activity while listening.
- We read and discussed the poem "Puerto Rican Autopsy" by Martin Espada.
- I introduced Haiku form with other classic Chinese examples.
- At the end of the course, students wrote their own Haiku poetry.
- We made a book of their work called Dialogues Between My Soul and Heart.

Developing thematic units provided an intersection between my work towards a student centered, participatory classroom, and activities that were informed by MI theory. The diversity in this unit invited and drew out student expression in many of the intelligence areas and applied Gardner's definition of intelligence: to solve problems and create products. In this way the thematic units opened doors to diverse intelligences and more comprehensive levels of knowledge and use of English as students faced challenges related to tasks, texts, and interpersonal work.

METHODS

First group: Un Paso Mas

This class, entitled Un Paso Mas (One More Step), had 13 students at the beginning and 12 at the end. We had divided a 40-student elder life skills class so that these more serious and advanced students could have an opportunity to learn English in a more focused environment. As related to my question, I used data collection tools to cull information regarding: students' level of literacy in their native language, students' perceptions of effective teaching and learning, students' intelligence profiles, and my own process of planning and teaching the class. A description of the tools follows.

- Baseline Assessment of Native Language Literacy
  At the beginning of the semester, the students were asked to write (in Spanish) answers to three questions: 1) How many years did you go to school in your country? 2) Write a little bit about your life; and 3) What is the most difficult thing for you about learning English?

- Individual Surveys
  I administered baseline surveys at the beginning of the semester to elicit students' responses on questions such as: 1) How do I learn best/How do I like to learn? 2) What is a good ESOL class? 3) What kinds of classroom activities help me to learn the most? The surveys were mainly in the form of pictures, with minimal words. The student circled the picture that most closely portrayed his/her idea.

- Focus Groups
  Twice during the semester, I conducted a group evaluation of the students' impressions of the class work, processes, and products. In March, at mid-semester, we watched a video of their dramatic presentation of an Easter dinner party; in June, at the end of the semester, we looked at the process and products from the unit we had done on natural medicines. We discussed: what they saw as good/bad in terms of teaching and learning; which activities, curriculum, worksheets, and projects helped them to learn the most; their developing awareness of their own intelligences; and the relationship between thinking about their intelligences, the classroom activities, and learning. I completed charts with this information. In the final assessment, I also tape recorded and later transcribed sections of the discussion.

- Student Work
  Individual students' surveys, literacy assessments, and writings were copied and kept in folders. Additionally, all whole class projects and products such as books, photo essays and assessment charts were collected as data along with their explanatory journal entries.

- Student Self-Report
  To assess students' intelligences and create profiles I used sets of photos of people engaged in tasks which represented each of the intelligences at work in domains where the intelligences could be seen. The students guessed the categories. After they had guessed the intelligences, I told them about the theory. Later they identified areas of their lives which indicated skills, interests and experiences in these areas. We discussed their strengths and weaknesses, and later they wrote about them (in Spanish) on a handout I had made up which had a space for each intelligence and a brief description of it to remind them.

- Teacher Journal/Log
  During the first semester I began each journal entry with a description of the classroom activities and process, week by week. In the second part of the journal entries I discussed related thoughts and feelings, observations, goals, problems, and my impressions and evaluations of my attempts to communicate MI concepts, to conduct specific activities, assessment tools and process, and materials/curriculum. I explored my own blocks, doubts, and frustrations, in relationship to myself, student/teacher communication, the students/class, and the challenges of interpreting MI theory. My journals ranged from 10 to 40 pages per month and are the primary source of data collection.

- Planning Notes for Lessons/Sample Materials
  I kept my daily planning notes and any worksheets I produced, copies of the materials I pulled from books, description of any materials used in class and in planning, and other manipulatives or games that I used.

- Planning Notes, Dialogue and E-Mail
  I communicated with my AMI project partner, Terri Coustan, by phone and e-mail. We explored our questions about MI theory, developing curricula and similarities, and differences in our students" responses to our work. Additionally, we solved problems, coordinated our data collection tools, and read each others" monthly journals.

Second Group: Level 2

This group was made up of 15 students with varying abilities in a level called "intermediate" or Level 2, the highest level in the community based ABE program in Chelsea. I designed the data collection tools to help me uncover students' reactions to a curriculum that I designed "in the spirit of MI." Several of the data collection tools were the same as the first semester, including: individual surveys, focus groups, student work, teacher journal, and planning notes for lessons/ sample materials.

Additional data collection methods I used included:

- Mid-Semester Assessment
  I conducted a mid-semester assessment of the students" ideas and feelings about the class and activities we had been doing. This data was collected individually and anonymously in free answer form using a handout. The responses were tabulated into chart form, displayed on the wall and reviewed with students for analysis and ongoing discussion.

- Group Surveys
  Baseline, ongoing (planned and spontaneous), and end-of-semester surveys were done to elicit students' responses to issues of teaching and learning, classroom activities, and projects. I did these on an irregular basis, depending on the class work, more or less every 2 weeks. We looked at the units and projects, the materials we used, and products we developed and created individually and in groups, and discussed: 1) What kinds of classroom activities help me to learn the most? Why? Or more specifically: Was this activity good or not so good for learning/ practicing English? Why? 2) What is a good ESOL class? Why? 3) How do I learn best/How do I like to learn? Why? Their responses were written in chart form on paper on the wall or on the board. I recorded into my journal student responses from the chart as well as some of their direct quotes. One such session was videotaped and a portion transcribed as data.

- Student interviews
  I interviewed the students individually at mid-semester and again at the end of the semester. I used a questionnaire protocol, but the interviews were relaxed and flexible. It was most important to me that the students felt comfortable expressing their thoughts about the class to me in English. I let their ideas direct the flow of the interviews. I asked them what they thought of the class and what helped them to learn. We looked over their journal writing work for the semester and I noted their thoughts on their work, progress and process. I tape recorded about half of these interviews.

- Student Work
  Individual students' surveys, journals, photos or descriptions of their projects, and writings were copied and kept in ongoing folders. Additionally, whole class projects and products such as student created books, class photos and videotapes were collected as data along with their explanatory teacher journal entries.

- Daily Logs
  Recognizing the value of informal student comments in the first semester, I created a daily log that I completed as we worked in the class. This was a place for me to jot down the students" spontaneous and informal actions and comments which showed a different side of their thinking than the more formal assessments.

FINDINGS

What effect does metacognitive awareness of their own multiple intelligences have on the perceptions of effective ESOL teaching and learning by students with limited native language literacy?

What happens when I try to integrate MI into an ESOL class ?

This section describes each of my findings and presents overarching contextual factors, divergent cases, and other possible explanations for my findings. In response to my research questions above I discerned several interconnected findings:

Findings

- Students initially resisted non-traditional activities which were more "in the spirit of MI"
- The teacher (I) also resisted aspects of MI theory and application
- Students developed more positive attitudes about the value of nontraditional activities that were in the spirit of MI for learning English. Contributing factors to changed student perceptions include:
  - opportunities to participate in nontraditional activities
  - opportunities for students to assess if/how activities helped them learn English
  - visibility of project work for reflection on and assessing learning
  - time to build trust and community
  - contextual factors

CONTEXT MATTERS

As I considered these findings, I recognized that contextual factors shape the effect of MI as it is filtered through teacher and student reception to and use of it. The contextual factors which I identified were variable in each class; however, my research suggests that all are important for teachers to consider if they want to integrate MI theory into their practices. They include (I have identified them with letters for later cross-reference):

(A) Students" prior educational experience (or limitations) shape or limit their expectations for English class, generally causing them to feel more comfortable with traditional methods.

(B) Students' socioeconomic contexts led them to specific goals and uses for English such as for jobs or lifeskills. Students resisted when the class looked like it diverged from meeting their needs or their view of an English class appropriate to their goals.

(C) Students" goals/motivation/investment in the class caused them to have specific goals such as English for jobs and to get them out of the house into a social situation. These goals affected their investment in the class as well as their motivation to try new methods for reaching their stated goals.

(D) My background as a teacher and what I was already doing caused me to question the role of MI in my practice in connection with other theories which already inform my work.

(E) Institutional constraints caused situations which either made it easier or more difficult to integrate activities that were in the spirit of MI into my practice. These included things like class size, desk configuration, and use of a textbook.

Finding 1: Student resistance to nontraditional activities

In both settings I initially met with student resistance to activities that were in the spirit of MI. In assessments at the beginning of the semesters, students' responses indicated a preference for a teacher-directed, more traditional English class; that is, one that is based primarily on reading and writing, grammar, and structured conversations (to practice grammar). Students in both classes placed high value in working from a textbook, believing that these author/experts know best how to learn English.

In my baseline assessment with the Un Paso Mas group, they responded that dictation and writing on the board are the best ways to learn. They requested a cassette to practice common expressions by repetition (12/96 p.2). Using pictures showing students learning in different ways, the students identified by circling, which ways they thought were the best. Their choices and the number of times each choice was circled follow: The most frequently circled were "listen" (9), "read," "speak" and "write" (8), and "work with a group" (7). The least circled responses were "work alone" (3), "speak my language," "laugh" and "draw" (4).

The BHCC group also demonstrated an initial preference for traditional classroom practices. As a baseline assessment, I asked the students during our second meeting to state what they considered good things to do in an English class. Two students replied "Dictation." Other individuals wanted "rules about syntax," "pronunciation practice," "homework," and "practice with perfect forms."

At mid-semester the BHCC students' preferred activities were still traditional in nature: pronunciation (12), grammar (11), and conversation (10). The least favored activities were creative group projects (5) and listening to songs (4). These last two categories received the most responses for being the least liked. They were also the activities that had been more in the spirit of MI during the class up to that point. So not only did students seem to prefer traditional activities, they also voiced resistance to the more nontraditional activities.

Also, around the time of the mid-semester assessments, two students specifically asked me to use a book and to take a more teacher-centered approach. In a note Julio said, "Teacher about the class, I think it"s better if you follow a book for teach, because if you follow a book you know what you have to do, because you"re teacher and we think different." (11/97 p.15). And on the same day, Patricia clearly expressed her preference when she pounded the table and said: "Teacher, you are the teacher, and you have to give us the homework and tell us to do it, it doesn"t matter if we like it or if we don"t like it, you know what is good for us, you tell us what to do, and that"s it." (11/97 p.16).

After one November class Ricardo expressed to me privately that he had disliked a group activity making group collages portraying elements in planning a party. He said, "It"s about the class. I don"t like when we do that stuff." He gestured towards the collages on the wall. "It"s for children. I talked with Sofia and some of the others and we prefer to do conversation." (11/97 p.5)

Other Possible Explanations

There are other factors which may have contributed to this finding of student resistance. For one, in the BHCC class, there was a group of four students who openly displayed negative attitudes towards many aspects of the class (I called these students "the groaners"). Upon closer examination, I noticed that it was primarily one student and she served as a ringleader, demonstrating a negative attitude to nearly every activity, even the most traditional. For example in September I handed out a short story for in-class reading, a seemingly traditional and safe activity, "I said that I liked the story and thought they"d think it was nice. Patricia said You always like the stories" " (10/97 p.3). Her three peers rolled their eyes. My realization of Patricia's general resistance diffused the power of her negative comments regarding nontraditional activities. In the final weeks of the semester, she stopped coming to class, and the resistance to me and the way I teach was dramatically reduced, including that of her fellow "groaners" who were ultimately quite supportive of nontraditional activities for learning English.

There were also instances of students who did not demonstrate initial resistance to nontraditional methods for learning English. In my baseline assessment with the BHCC group, one student thought doing dramatic scenes was good in English class and another said using the computer was a good way to learn English. In my first month with the Un Mas Paso group we had a nontraditional class, one that included sequencing photos of a dramatic presentation, discussing the process and story, and writing the story down. The students" responses showed that they valued the session: Mario said it was a good way to learn English. I suggested that we put it up on the wall, as a story, but someone else wanted it to be a book that they could study from" (12/96 p. 5). This suggests that at least some students accepted an unfamiliar, nontraditional way to learn early in the project. (But it also suggests that students wanted to connect the nontraditional activity into a more familiar, traditional learning tool, a book.)

I identified contextual factors that likely shaped students' attachment to traditional methods and resistance to other approaches. Relevant contextual issues included a lack of experience with nontraditional classes and teachers (A). With the elder group, their average length of L1 (first language) education is three years, primarily in the 1940s in Mexico, Central America, and Puerto Rico (L1 literacy assessment, 12/27/96). A colleague at Centro Latino clarified another contextual factor for this group. She pointed out that many of them attend class for fun and socializing, that it gives them a rare opportunity to get out of their lonely, tiny apartments (C). She suggested that it is not me or what I am doing in the class, but that the elders have been doing, perceiving, and thinking about things in specific and often narrow ways for 60 years (3/97 p.20).

The students also voiced that they wanted this class to look like what they perceived an English class to look like. They told me more than once that they had other places where they went to do arts and crafts, but this was the place where they came to learn English (C). This was true even with the

Level 2 group, who had had longer exposure to L1 education. But I can imagine that it was of a traditional nature. In fact, the teacher with whom many of these students studied before me is known for her traditional methods and teacher/student roles. So even once they began to experience new ways of approaching ESOL in instruction, it is not surprising that there would be dislike, resistance, and a longing to return to the known and safe. I quote from Betsy Cornwall on the AMI listserv: "Most people don"t mind change, they just don"t like being changed. Education transforms lives. Memorizing facts and putting in seat time doesn"t. What if a student doesn"t want to be transformed?" (Autumn, AMI listserv)

Finding 2: Teacher's (my) resistance

My second finding is that of my own resistance to using MI theory. Two factors contributed to my resistance: 1) my contextual background in relation to imposing a new theory into my practice, 2) understanding assessing student intelligences, "profiling," to be a required element of implementing MI.

Contextual Factors & Imposing a New Theory

As described earlier, I came to the AMI Project with theories which supported my instructional choices. To use MI as a "lens" onto my practice felt forced because I already looked at my practice through multiple theories or lenses. Also, good ESOL teaching already includes activities that MI theory suggests, because diverse approaches are essential to reach learners who do not share a common language.

Certainly, I had integrated nontraditional methods and project based learning into my classes prior to my work on the AMI project. However I had not struggled with as much resistance then because I looked at them through lenses which I chose. But trying to look at class activities through an MI lens caused conflict, confusion, and resistance, strongly suggesting that the context of what the teacher is already doing in the class, her goals, and her own academic background and theoretical perspectives may shape the usefulness of MI theory for her practice and/or her resistance to it (D).

In October 1997 with the BHCC class, I struggled with trying to use MI as a framework: "There are many concerns in adult education, and to try to structure them into a framework, no matter how flexible, and to try to collect data from the students, no matter how connected it is to the framework or their learning or the curriculum, well, it"s burdensome" (teacher journal, 10/97 p.1). Here when I mention "many concerns in adult education" I am referring to contextual factors A, B, C, and D and how it is my job as a teacher to consider them all.

Trying to structure a class that was explicitly MI-influenced was difficult and often became more teacher-centered than I was used to. As a member of this project I felt obligated to implement certain MI practices in my classroom. This led me to feel like I was imposing my own agenda upon the students: assessing students' intelligences, conducting MI-informed activities, and collecting multiple forms of data about the students" responses to the activities. Even when the content or thematic unit was of importance to their lives, one of the tenets of participatory education, research requirements meant spending a great deal of time on activities from my own agenda, and that conflicted with my philosophy of teaching. Participating in an MI research project, I felt compelled to emphasize MI, yet it made me uncomfortable, as would the need to impose any theory on my teaching practice. Moreover, as my students demonstrated resistance to the MI activities my own resistance was augmented.

My struggles applying MI theory were inextricably linked to the context factors described above. That is, much of why MI theory felt forced and the practices imposed is because I already used a set of theories upon which I bad my practices. This was particularly true because I struggled with if and how MI fit into or even added to my existent practices. In February 1998, I detailed an ongoing struggle with a related question about what is particular to MI in my practice:

"I am having a lot of trouble thinking in terms of MI this semester. It seems forced to me. It seems contrived to call my lessons MI, when I don"t think of them in that way at all. If I don"t think of them in this way and my students don"t either, then am I doing MI at all? Sure I can call what I do MI: if I have them read and talk about a story and then fill in a chart, I guess that is linguistic, logical and interpersonal, but to me it is just the way I teach and not related to tapping into diverse intelligence strengths of my students. I teach the way I do to give students a wider range of opportunities to practice with the material, and different/more ways of looking at it, understanding or talking about it, but not on an individual level of their intelligence strengths. So what makes it MI? I am really confused about this."

"...Maybe then I can say that everything I do is MI, because MI encompasses all the ways people are intelligent. But why look at my activities through this lens, when for me other lenses are more valid and relevant to my teaching context? Why should MI get the credit?"

"...For me that is not the foundation that my curriculum is built on. Does this mean that I don"t get it? Am I missing something, after all this work and research into MI? Am I short circuiting on an essential piece which would help me to see that it really is the drawing on my student"s intelligences that makes my class helpful to them over interpretations of other theories? . . . I think this rich diversity of activities and ways to approach material has already been popular with ESOL teachers for a long time, because of the nature of having to reach students with a limited common language, and needing to help them find opportunities to express themselves, find their voices. . . Maybe that is another reason why these classroom practices do not fall under the jurisdiction of MI for me." (2/98 p. 4).

Yes, I was doing songs and poetry and even collage in this class, but as a teacher and a researcher, I struggled with bridging between pedagogies: how to name them and who to give credit for them. Seidel and Krechevsky quote Kornhaber in their article "Minds at Work: Applying Multiple Intelligences in the Classroom" (1998). She points out that this question of labels comes up for teachers who already have theoretical frameworks for their beliefs and practices, so at least I am not alone in this wondering:

At first glance, MI appears to be compatible with many other educational philosophies and approaches, such as "project based learning." But this leads to the question of whether adopting the theory simply becomes a new label to describe already-existing practices and beliefs. While MI may sometimes serve this purpose, it can also provide a theoretical foundation and validation for beliefs and practices, deepening/and or extending them to new domains. (Kornhaber, 1994).

Problems with Assessing Intelligences

A major contributor to my resistance to MI was the idea and process of assessing individual intelligences. I began my research assuming -and resisting- the notion that I should develop individual profiles of students in order to apply MI well. I found the notion of assessing students' intelligences definitively, and providing "profiles," difficult and hard to justify. My attempts to assess individual MI profiles were not successful.

The following excerpts from my journal express some of my concerns related to assessing intelligences and developing individual profiles for my students. The first excerpt below shows my struggles defining intellectual "strength:"

"I prefer to think that pretty much everything is a combination of various intelligences and strengths that we have. Also part of the combination of intelligences, or how we manage in the world, create products, and solve problems is not actually strengths at all, but coping mechanisms for dealing with areas that we have to deal with in which we do not have intelligence strengths. Do strategies for how to manage our areas of actual intelligence WEAKNESS fall into other intelligence categories, or are they somehow just general strengths and courage? In a way, overcoming a lack of linguistic intelligence and still surviving in this society is a fierce intelligence all in itself, isn't it? Whether people with this makeup manage by using and depending on their other intelligences I don't know." (teacher journal, 4/23/97)

The excerpt below demonstrates the seeming elusiveness of identifying an individual's intelligence areas:

> *"One of my students...crochets beautifully. She must do it every night because almost every week she brings in a gift for someone, a delicate item which she has made. But in her case, she may have more bodily kinesthetic and logical mathematical and linguistic intelligences associated with her skill than spatial, because she always works with a pattern, so she is manipulating the materials with her hands, reading & interpreting the pattern. This seems to be different than inventing the pattern herself, sculpting the crocheted items, which would be the spatial intelligence, I would think. On the other hand, she has told me that she sometimes gets the patterns by watching other people do the work. She watches the Spanish TV station and there is a handiwork show on, and she learns to make new things from that. So this could also be interpersonal, her ability is to watch and listen, as much as it might be spatial, an artistic, sculptural interpretation. So, what may seem obvious is actually very complicated and specific" (teacher journal, 4/97).*

I also struggled with the notion that we don't always demonstrate our intelligences at promise. How does one observe and assess intelligences that are hidden or dormant? I explored these issues in my April 1997 journal:

> *"Additionally, as Gardner pointed out in his keynote address, all the domains and the intelligences are culture specific in emphasis and valuation. For domains and*

intelligences which are not valued or praised or are even ignored, have little outlet in our specific cultures, families and socioeconomic brackets, these may be underdeveloped, stifled, atrophied or long forgotten in even people who do possess them strongly. In this case, people may not even be able to use intelligences which might have been in fact their strongest ones."

"For example, in my own case, I have a very low logical mathematical intelligence, and especially low is my own opinion of my capabilities. But when I was in Junior High school, I was very good at math. In fact, so good that I was tracked into the high algebra group with the good math kids. However, ever after that, I was terrible at math, the class was too fast and abstract for me. I ended up with bad grades, frustrated, confused and finally stopped taking it. From there, I developed fear and self deprecating feelings about all things mathematical. I had a business for 12 years with out ever once balancing my checkbook! So now as an adult, I have a limitation which was once a strength. Is it because of an unnoticed error on the part of the school...or is it because my math intelligence was only good up to a certain level of abstraction, then it reached its limitation? Did I have a high affective filter with the higher level teachers for some reason which prevented my accessing the material? is it because it was the mid "70"s and I wanted to spend my time sewing miniskirts and stringing beads instead? Was it uncool for girls to be good at math? Perhaps I was rebelling against my parents. . .who knows? The point is that if I don"t know, no one does. I would venture to say that every adult student has stories of the development or estrangement of their intelligences which are at least as complex and difficult to untangle as mine. For me this is really starting to call into question the part of MI that stresses that individuals investigate and become familiar with their own intelligence profiles. This is a complex process that depends on many things. Given the usual context of the 4-6 hour a week adult ed class, well, it"s a tall order to think that teachers and students can put enough emphasis on seeking these profiles to arrive at something which might be accurate enough to be applied helpfully in other areas of life and learning."

"Additionally, we must also consider the most important of all intelligences here, the intrapersonal. I am able to look at and consider this connection between my math intelligence and my past, but many adult learners seem to have limitations in their experience with the metacognitive domain, and self analysis in connection with an abstract theory. This also may be a factor of culture (or age, in the case of my elders). This is just to say that in my opinion, especially when talking about MI with adults, the importance of: cultural values, practices and taboos, prior education: duration and experiences, socioeconomic status, family history and individual role, expectations expectation and self confidence/past successes and failures intrapersonal skills and experiences, goals, teacher/student relationship, trust, warmth, comprehension. . .cannot be ignored. I am starting to think that the

intelligences are a lot more complicated and jumbled than we can hope to assess in ESOL classrooms."

Assessing students' strengths and "profiling," represent a particular interpretation of MI theory, and one that did not jibe with me, my students, my context, or my goals. Once my thinking about MI evolved beyond that point, I no longer experienced this type of resistance to using MI theory. Moreover, as my research progressed, with time and building experience and community, and with changing the assessment emphasis to a more student directed process, the students began to show acceptance and high value for the diverse activities in the class. As their opinions changed and were articulated to me, my own resistance diminished.

Fnding 3: Student's perceptions changed

Change does not happen easily: challenging assumptions and setting out to explore new territory can be painful and cause resistance which takes many forms. Therefore, if I am going to show a change from resistance to acceptance of nontraditional methods of teaching and learning, we will have to see some growing pains.

After weighing possible reasons for students' seeming discomfort with nontraditional activities, such as a shift in balance of power in the classroom and ongoing assessment of what helps them to learn, I comment in my journal, "Traditional ways of teaching offer a path that is more relaxing and less responsibility... Supposedly books and teachers have already thought about what is a good way to learn. I can see that my asking them questions about this is unsettling to their ideas of teaching and learning" (teacher journal, 11/97).

"Even at midsemester my findings were disappointing. Assessments showed up a desire for the traditional, and then I felt bound to honor their wishes. The results from the assessment seemed to be a step towards the traditional, rather than towards the diverse activities we had been doing. I was conflicted over whether to honor students' wishes for the traditional or push on with less traditional activities, hoping for later acceptance. I wondered wonder whether I would end up using a textbook because 90% of the students expressed a desire for one. 'Why do I do these mid semester assessments every semester and then never fail to find out that they want more grammar?'" (11/97)

Ultimately my data demonstrated that students' perceptions had shifted with respect to effective ESOL teaching and learning. Specifically, they became more accepting of nontraditional activities as valuable to learning English. I identified several factors responsible for students' changed perception:

- Participating in theme-based or project-based activities that are "in the spirit of MI"
- Self-assessing learning activities, emphasizing what helps them learn English
- Prominently displaying products from nontraditional activities
- Allowing time for trust to develop and for community-building
- Contextual factors

Students Participate in nontraditional activities
I used MI theory to develop thematic units and creative group projects, extending students' exposure to content areas. These activities also offered students more diverse entry points to understanding, learning, and practicing the material. Thematic units also helped to overcome the problem of various levels in the class, helping to ensure language acquisition opportunities for all students.

Thinking about the definition of intelligence from an MI perspective helped me to integrate MI theory into my practice: I asked the students to make content connections across various activities in the units, which is a form of problem solving. Additionally, in each unit, there were aspects of creating products. I believe that these thematic units also helped to maintain the students" interest in the text/content area over a longer period of time, giving them an opportunity to go deeper into the material in areas of both form and function: more depth with thinking and content, as well as with practicing English structures and self expression.

Additionally, I learned through the assessments described below, that it works better for students if I extend the non-traditional off of the more traditional activities. This appeared to help the students feel comfortable with their capabilities in the newer areas. Having first had a chance to access the materials in a way that they felt comfortable with, they were more open and willing to try a more unusual approach. Following is a list of activities from a unit I conducted in the elder class. The unit offered diverse materials which I expanded by keeping MI theory in mind.

Health and Natural Medicines Unit

- Doctor's office and health vocabulary words and pictures from the Oxford Picture Dictionary
- Manipulatives activity combining the pictures with vocabulary words on strips of paper
- Pronunciation practice with Spanish/English health related cognates: cion/tion endings emphasizing rhythmic patterns
- Devise a visual memory strategy for remembering pronunciation (underlining the strongest syllable in the word)
- Simon Says
- "Trip to the Clinic" board game and assessment/natural healing discussion
- Natural Medicines book: Gather ingredients and preparation tools; vocabulary practice from drawings for necessary nouns; make and photograph the recipes in progress; put jumbled photos in sequential order; discuss the steps of creating the recipes; grammar exercises with necessary verbs; sentences and cloze activities with manipulatives; manipulatives activity with relevant sentences to be reassembled from word strips; process writing and editing of recipes in two languages; read aloud the recipes in Spanish and English; draw pictures for the cover and vote for the favorite; write the introduction using a LEA process; and read the finished book.
- Assessments: pictorial chart to assess individual and group responses, and discussions which were tape recorded and written quotes highlighted.

I learned from their written and oral assessments that students from both classes found a diversity of activities helpful for learning English. In the assessment at the end of the medical unit, three Un Paso Mas students affirmed that it was good to have done so many different things to learn the words. They commented: "Everything helps a little bit"; "Everything helps for learn"; and "A little bit of everything is good" (chart/taped assessment).

As time passed, the BHCC students became more open to the in-class group projects that they had at first resisted. I believe that this openness came in part because they were doing real work together on solving problems and having to find ways to form and communicate their ideas in English. For example, group projects encouraged them to: interpret and analyze the assignment, refer to a text, photo, or classmate for ideas, decide how to work together to manipulate/ draw/act/write/make a chart to express and organize the information, negotiate ideas and work progress, and present the group's project.

Several of the BHCC students indicated during an oral assessment in early December 1997 that they appreciated the diversity of the class process, and Sofia even said that it had helped her to learn English faster. I had written on the board the aspects of the class that I wanted them to consider in their answers to the question: "What do you like the best in English class?" The aspects were: journals, handouts (grammar, readings and classwork in students' notebooks), and projects whose products are displayed on the walls. A representative comment was, "All three points of what you write on the board help. Because you have to try many different way how you can learn more fast. For me I like to try a different ways. I like this" (12/97 p.13).

To my next question,"What helps you to learn the most?" Ricardo replied, "Everything in this class helps us. Believe me, because ah, you know everything is interesting. And for myself, I can say that writing I learned so much because when before I came here, I write just a little, but now I can write a lot. Because I speak more than writing. Everything in this class is good, myself I can say." Roberto added that, "...All is good, grammar helps make writing more clear, and everything together is good" (12/97 p.15).

The Key Role of Student Assessment of Learning Activities

Once I established that metacognitive awareness of intelligences was irrelevant to our classroom work and goals, I discontinued related assessment activities. I redirected classroom assessment practices, aligning them more closely to my beliefs about student directed learning. I focused on learner self-assessment that asked students to think about teaching and learning from a personal perspective: What helped them, individually, learn English? This not only enabled me to hear students' perceptions, but I also observed related changes in students' responses toward nontraditional, MI-spirited activities. I think more importantly these findings show that actually doing the assessments played a role in changing the students' ideas about good ESOL practices.

I do not have direct student comments that they valued having done the assessments. But I will show substantial documentation for this finding that aspects of assessment contributed to the students" and my changing perceptions about the value of MI-spirited activities. These aspects are: giving students opportunities to see and articulate their opinions of diverse approaches to curriculum, encouraging students to take control over their own learning, helping students think about their learning, in effect building metacognitve awareness, and contributing to trust- and community-building.

Students initially resisted the assessment activities. The process of questioning students in itself was unusual and uncomfortable. Asking students about teaching resulted in an accompanying shift in the balance of power in the classroom towards teacher/student equality. This caused confusion and disrespect. Student resistance and requests to use a book made me think that "Maybe they think that because I keep asking them if they like things or if they think things help them to learn, maybe this gives them the idea that I don't know how to do it (teach), so I have to ask them!" (11/97)

"Does this really contribute to creating a democratic feeling in the classroom, a new perception of some level of power and self awareness, or a feeling of taking control over/responsibility for their own learning?," I asked myself. "These are supposed to be part of the goals of this mid-semester evaluation of the class. Or does it only contribute to the maintenance of the old linguistic logical/ mathematical paradigm of language learning because when they tell me that they want grammar, and I have taken the time to ask them, then I feel bound to do it!" (11/97)

These cases show that assessment itself is not always a smooth process in the class. The process was questionable for the students and for me. And the assessments often gave me disappointing information that demonstrated students' preference for traditional ways of learning. Time, developing trusting relationships and building a safe classroom community are all things which helped to build students' positive opinion regarding the assessments, and to the nontraditional activities they assessed. I discuss these below.

Participation in oral assessments exposed students to a rich diversity of opinions about effective ways to learn and about what is beneficial for an ESOL student. Hearing others could not help but contribute to students' recognition that such diversity exists. And through their participation in the assessments, by definition a "metacognitive" process, the students developed new capabilities to think about and explain their opinions, in this case about the effectiveness of a diverse ESOL class for teaching and learning. That is, actually doing the assessments -checking in with my students-helped them to learn to think about and articulate their feeling about learning and teaching. In so doing they were really thinking about what and how they were learning. In turn, this helped them see the value of nontraditional activities in relation to their learning English.
In the following section, I present data which shows students became more able to articulate their ideas over time. For the BHCC class having had to solve the problem of how to voice these thoughts in English also represents a developmental step in language acquisition.

With the elders I struggled with assessments in the beginning. They said that everything was good and appeared to be trying to please me. However, by the end of my work with this class, they were able to articulate clearly what they had found helpful about the medical unit, and why, giving positive comments as well as negative. The following are examples of student responses that show not only an ability to articulate, but a highly developed awareness of their preferences in learning:

About the game
"It was medium, it helped a little bit because you put your mind in the game."
"I never liked games, never played games, but it was good. Good for a short time but not too much."
"I liked the game, until I had to sing."

About the aloe drawings and vocabulary
"These are words we use every day, it's useful."
"Very good, we learned a lot of words. I'd heard the word blender, but I didn't know what it meant."

About reading out loud and talking about the recipes
"Writing and pronunciation help a lot. The best is writing and talking about it."
"Very good. Good to have help from this Luz. Better to talk first and practice after." "Very good, I learned various words. It's a good idea to talk to students first about words. Give us ideas about the

words, after, write. Pronunciation is the best. I can't understand it from the dictionary, but to talk is the best."

The BHCC students also were more willing and able to articulate their knowledge of their own teaching and learning preferences at the end of the semester than at the beginning. After the baseline assessment students began writing me unsolicited notes to let me know how they were feeling about the class and what they wanted to do in the class. Julio's unsolicited note was a request to use a book. Ricardo wrote to me in his journal "Thanks for your patience with us. You are excellent teacher." Celia commented about a specific activity, "Thank you for the tape, teacher, it help with pronunciation and new words. Keep use them!"

The elder class also became more comfortable in telling me what they wanted in our class as a result of ongoing assessments and my respecting what they said. Earlier in the unit, after we had done a manipulatives activity with medical words and played Simon Says, Martha wrote her affirmation on the board: "Centro Hispano tech pley" and when I asked her to read it to me, she said "Centro Hispano teacher play." I said "good, that's great!" and she replied with "thank you teacher." But the best part is that then, she wrote under her first sentence on the board: "good" (teacher journal, 4/97).

Another example of students' growing comfort stating their opinions occured in the elder class. During the latter part of the chart/tape recorded assessment of the medical unit, students changed the topic completely and told me that they needed me to discipline them more for more effective learning. Mario: "But if we let her go on, listen while she is already giving the class, and when it is finished, begin with the questions-- but we are not letting her give the class, we have to ask the questions when it's finished." Yvonne: "But she tells us to pay attention." Frank: "Yes." Luz: "And we answer like children." Frank: "Yes, I am like a little boy with this." Luz: "If she tells us to pay attention, then I'm not going to draw. You're not going to XXX, he is not going to be writing."Mario: "Yes, clearly, knowing, knowing that we have problems that we can't learn, and because. . ."

The students are discussing my need to discipline them. Mario says that they have so many things to pay attention to in their homes when they try to study, the kids, the work, the kitchen, but here in class they need to take advantage of the opportunity. But Frank says that because they are elderly, they have special problems with paying attention, and they need to be disciplined more. The conversation continues as the students voice their opinions adamantly, sometimes banging on the table. My journal entry states, "Certainly with students who are usually so complimentary and respectful of the teacher, for them to critique me this strongly and unanimously is significant" (teacher journal 6/97).

Assessment helps students assert themselves and take control of their learning.

At the end of the semester, the students had not only taken the initiative to speak up for what they wanted in the class and from me, they had given me: very specific reasons why they considered these strategies helpful to their particular situations, examples of when it had been helpful from past classes, and ideas for ways that I could carry out their suggestions in a way that would benefit them in their learning processes.

Additionally, in conversation about the Easter dinner dramatic scene, two of the elders were very clear that they did not find the activity helpful. Luz is recorded on video saying after the first run through of the scene, "This is for children." Later in the formal assessment where I filled their responses into a chart I asked them if they felt that doing the scene had helped them to learn English a lot, a little bit, or not at all. I had a chart on the wall which I filled in with each of their responses. They all said "a little" but Grisel said "not at all." Her reason was very heartening, however. She said that she does not need English to talk to friends in her house, as she always would do this in Spanish, so it did not help. I asked if it would be helpful to do another scene in a location where she needs to use English, and she said yes. She suggested a store, the street and the hospital. They all decided to do a hospital scene, but they wanted me to write out the dialogue for them so that they could memorize it (teacher journal, 3/97).

In the discussion about the dramatic scene the students were able to take control over the direction of their learning and tell me that another context for a dramatic scene would be more closely related to their real life needs for English. The student's request exemplifies the participatory approach in that she wanted the content of the class to build on her needs. This also points to the importance of considering the context of students" socioeconomic situations and motivation for attending the class when planning activities. After her comment, we began the medical unit in this class. These direct statements about preferences of teaching and learning did not happen at all or at least not in this detail at the beginning of the semester. The students" awareness of what they want and their comfort level with expressing their needs are both in part the results of our ongoing process of assessment in the class.

In two documented instances, students expressed interest in doing further work of a non traditional nature in their future English classes. I believe that these comments show that they are interested in the potential that a diverse, project-oriented class can offer them for acquiring greater control over English. Additionally, they developed an investment in this type of student centered class which encourages their thoughts about and is responsive to their needs as learners. Without the support and respect for their voices that ongoing assessment provided, these students would not have been able to express their ideas in these ways, or have had enough practice to develop the ideas.

With the BHCC group, in December 1997 after we watched the video of their drama scenes, Celia and Sara in particular showed a relaxed attitude and self confidence that was new for them in asking for more and specific drama work in the next class. There was a lot of talk of how they looked and the idea of doing more drama in the next semester. Celia asked me about a play that she knew about a Puerto Rican in New York who has to go to jail and learns to read in jail. She described it in depth! Did I know it, or could I find it? She said "Maybe it will be easier for us to work with a drama that has the words written, and this one is about a Puerto Rican experience." I told her that this is OK with me, but that way, they would have to memorize and use new words. . . . She liked this idea, but Sara preferred to improvise: "I prefer to improvise, to work in a group to decide what we want to happen in the drama. Maybe we practice some times first so we can do it better and know the words to use." I reminded them that next semester we will have many new students in the class, and that we will have to see if they want to do drama as well. He said, "We can tell them how fun is, and show them the video, they going to want to do it." I said that maybe if they didn't we could have two groups in the class and do different things. (I partly said this because also, I don"t know if all of this class would want to do drama as a focus in the next class, wanted them to feel that their control and participation over their class is not running away from them.)

They talked about bringing in a camera to videotape rehearsals before the performance when a research team would videotape. The discussion was rich, they were excited with the possibilities for their future semester in the class. We watched again:

> *"I don't like to see myself on TV."*
>
> *"Can I have a copy of the tape to show my family?"*
>
> *"She is realistic on the video, her attitude is informal and it look like life."*
>
> *"I don't like to do too much this kind of thing. Better when other people talk more. Better I small part. I no talk good."*

Then it was the end of class, they left because we had run over. One student stayed to ask me for a copy of the tape. Their enthusiasm about the tape and wanting to take the drama further really showed me that they are ready to take more control over their learning process. They are able to see what they like to do, what they think helps them to learn, how they like to learn and how they can learn by interacting with each other, not only with the teacher. Also, the freedom to choose that they have had in this class has given the liberty to ask for what they want in class. (teacher journal, 12/97 p.19-20).

Finally, in the elder class, when we talked at the end of the class about their book, Natural Medicines, the students connected the work in our class to other classes. Additionally, they articulated the importance of our work to their lives outside of English class, and of uniting together to advocate for a continued ESOL class:

> *"This is a source of pride for us. I took the other books we made to El Salvador and showed them to my children. Yvonne and I get two copies, because we are two, so I leave one there with them and keep one here for us. I told them that this is the work we do with our teacher. They read them. We read them together."*
>
> *"My daughter looks at these books like literature. She reads them at home and studies them. This book is like literature for us, we feel proud of it."*
>
> *"This is our literature." (holding the book up for the others to see)*
>
> *"Every book we make is better. The first ones were good, and this one is even better."*
>
> *"Yes, we are getting better."*
>
> *"We have other teachers but no one makes books with us like this. This is our literature." (teacher journal, 6/97).*

Visibility of Class Projects Informed by MI

Another aspect of our thematic work was displaying related products prominently in the classroom. As we did collages, assessment charts, games, photo work, group writings, we hung them on the walls of our room. I found the visibility of the project work was important in four respects:

1) It validated and marked progress in student learning.
2) It helped to build a community of learners in the class.

3) It helped students to overcome their book centeredness.
4) Having the unit products in plain view made the process of assessing learning activities easier for both students and teacher.

With the BHCC class, there was a marked change in their perception of the physical space in which we studied: from a dreary place that was dirty and ugly to an inviting place where warm feelings and good learning could come together. This was in part because we put their work (which was personal as well as visually appealing and grew out of our classroom processes) on the walls. They decided to bring in pictures of places from their countries, warm places, since winter is coming. Also some students wanted to bring in pictures of flags (teacher journal, 9/97).

Gradually the students grew attached to our room and took initiative themselves to hang things on the walls. These actions showed a pride in their visual work and collaborative processes as well as pride in our learning space. In early October, following the drawing activity: "Antony suggested that we hang the drawings up on the wall, so after class, he and I did that" (teacher journal, 10/97). Later in October, following the collage activity, I noted --I didn't have time to assess afterwards, but it was clear that they were a little proud of their collages, saying "Group 3 was the best!" and they were even eager to help each other hang them on the walls! (teacher journal, 10/97)

And further, on December 9th, the first day students wrote their Haiku poems in class, Two students hung theirs on the wall written on large poster board without my encouragement; I didn't even notice them until later in the semester. Finally, at the end of the semester, the basement and the work we did there together inspired the students to write this introduction for our Haiku book together while I scribed it for them on the board:

> *The mystery of the basement: Before nobody liked it, now it inspires us to write these short poems called Haiku. Before the basement was like an empty planet, then in the last 3 months of 1997, everyone contributed something to the planet. Now, we're going to miss our planet.*

Additionally, we hung the products of our activities on the walls in the Un Paso Mas class: the garden theme photos and writings, pages of the dramatic scene book, the boards with their "17 things that parents and grandparents can do to help their children and grandchildren," the assessment charts and pages from the Natural Medicines book. In the final class, I asked the students what was your favorite thing about this class? Two students said "Having things on the walls to display our work" (teacher journal, 6/97).

I found two other positive results which came from displaying our project work on the walls. The first is that because the projects showed our work and their progress, I believe their visual presence helped the students to overcome their book centeredness. The progress shown by the displays contributed to a feeling of satisfaction that their work amounted to something, similar to the feeling of completing chapters in a book. In the final assessments with both classes, not one of the students mentioned the lack of a book or the desire to work from one, (except our student-made books from class). The second result was that having the products of our classes on the walls made assessment much easier. The two worked hand in hand, because the visual presence helped students think about our work project by project and cumulatively at the end of the course to be less abstract, more tangible and accessible to the students.

Time, Trust & Community

Are there other possible explanations for this finding that students' perceptions were changed by a combination of the three factors above (thematic activities, assessments, and visibility of work)? What other factors may have contributed to this finding? I have to say that I think the attitude of the teacher has a lot to do with what the students ultimately accept and don"t accept as good for their learning. Teachers with vastly different methods and theories which inform their curricula development can all have students who like their classes and find them helpful, if they are warm, open, supportive and enthusiastic with their students.

I believe that the character and attitude of the teacher can go a long way to helping the students appreciate what she chooses to do in the class. I tried to be enthusiastic, supportive, encouraging, personal, understanding and dynamic in relationship to all that we did in the class and each student. I was honest with them and openly appreciated when they were honest with me. I tried hard to give them a great class that met their needs, and they were aware of my efforts. Amparo and Celia both pointed out in class discussions that they could see that I do a lot of work for the class and Sun repeatedly told me that I didn"t have to spend so much time on her journals.

In the final assessment of the elder class that I discuss above, (what was your favorite thing about this class?) Grisel said "Knowing you." For both my groups of students, the change in perceptions took time, so that they could bond together as a class, and develop trust in me as their teacher. Trust developed and helped change perceptions because they saw that even though what I was doing in the class did not look like it was in their best interests, they saw over time that it was.

I have always put a strong emphasis on building trust both among the students and between students and myself in my classes. The bonding process, building a community of learners and making the classroom a comfortable, safe space in which to create knowledge are essential aspects of my work.

Caine and Caine also state that these qualities are essential in a teacher: "Teachers need to facilitate bonding, encourage student leadership, communicate on different levels and in different ways, and respect cultural differences. And they must genuinely appreciate and feel a sense of the community that they seek to establish for students." (p. 127)

Caine and Caine also discuss comfort and trust in the classroom as related to risk taking. For the ESOL context, risk taking is an essential part of the language acquisition process. This is true on the surface level of the students' need to take risks with language in the class in order to communicate, and risk taking is even more important on the deeper levels of personal change and cultural adaptation that many ESOL learners are struggling with. They quote Doll (1989):

> *To engage in complex forms of learning, students often have to endure long periods of uncertainty, which can be threatening. There are times when the unknown is positively exciting and people are willing to take risks-- if they feel a specific type of safety (p. 141).*

The assessments helped them have a metacognitive perspective on their learning. In combination, they were effective in helping the students experience and become accustomed to non traditional activities, learn to trust each other and their own voices, and understand that this new kind of English class was helping them all access and practice the materials from multiple angles.

Another extension of the connection between time and trust is the students" ability and willingness to work through situations that were particularly challenging for them in terms of problem solving and creativity. In Making Connections, Caine and Caine support my theory that trust and a high level of comfort are conducive to students" ability to use their imaginations and explore unfamiliar areas of their thinking.

Creativity is facilitated by "autonomy, greater interest, less pressure and tension, more positive emotional tone, higher self esteem, more trust, greater persistence of behavior change, and better physical and psychological health" (Deci and Ryan, in Caine and Caine 1987, p. 77).

This relates to one of the BHCC group"s strongest goals: to think in English, a developmental step for which creativity, imagination and relaxation are essential. In her final assessment on the video, Celia said, "I liked the journal because in this case I learned to divide the paragraphs." She said that she likes the most recent wall project (reordering photos of paragraph theater and writing captions) the best because "I learned to speak English together, I learned to think in English" (12/97 p.11). I need to note here that her comment was followed by a huge, glowing smile.

Over time, they developed confidence and began to trust themselves, each other, the activities and me. An additional benefit of the oral assessments was that hearing each other and building on what classmates said and thought also helped their bonding process and deepen their self awareness. And students' ability to use their imagination in their problem solving processes is an indication of feeling safe and relaxed.

There are three examples where the BHCC students expressed their valuing of the opportunity to use their imaginations to develop their capabilities in English. First, in the second class when I asked the students (baseline oral assessment) to tell me what are some things they think are good to do in an English class, Celia and Ricardo said "Do things in class where you need to think in English." We talked about this when Celia said it, and I clarified it to understand it more specifically, that they wanted to be forced to think in English. We got it farther, that this might happen if they have to imagine situations in English as part of the class. (teacher journal, 9/97)
Later, we did an activity in which they had to talk with a partner about a photo: Afterwards, I asked them how it had been to talk about the photos, and they were very enthusiastic. They pointed out that it seems easy at first, but to talk to others about it, you have to listen to their opinions, and then think again about your own thoughts about it. Sara and Celia liked it because they had to use their imagination about the life of the person in the photos (teacher journal, 9/97).

With the Un Paso Mas class I don't have any data where the students explicitly discuss imagination in connection with effective to ESOL teaching and learning, however in June at the very end of our work together when we talked about the poem Comida/Food by Victor M. Valle, (teacher journal, 6/97) the discussion of the metaphors was a rich exploration of their imaginations in connection to both the poem itself and the deep interconnection of foods and their world in their lives. Our analysis of the poem involved a stretch of their imaginations. The students told me they had never seen a poem or encountered metaphor before.

In the next class, after reviewing the poem, a student said:

> *"I took this poem home last week and showed it to my husband. He reads a lot, all the time in English and in Spanish, and he couldn't understand the connections. But here in this class, we can understand it together" (teacher journal 6/97).*

Her comment serves to emphasize the importance of a trusting community in an ESOL class. This finding is essential because without community in the classroom, students may not feel comfortable enough to acquire language or even communicate. Without this level of comfort, the effect of MI or any other approach will be lessened.

However there were comments from two students in the BHCC class that they didn't feel comfortable in the groups at times because other classmates made them feel badly about the way they speak English. For example, in her mid semester interview, Sara said, "I don't like to work in groups because some people make fun of they way I speak English" (On cassette). And in his final interview, Roberto gave four specific examples of how his English had improved in his home and work outside of the class, but finally he said: "In the class, I am shy to talk even now, because some people are not that tolerant of all the accents in the class and how slowly classmates talk, but I see that in the street and in my life, I improve. Not a little, and not a lot, but the progress is with me. Little by little I learn more English" (teacher journal, 12/97).

So these could be looked at as negative cases that run counter to my finding that trust and bonding helped them change their perceptions of an effective teaching and learning situation. It must have been other things aside from feeling comfortable developing their communication skills in groups that changed the minds of these students, or else they managed to benefit from this work in spite of their lack of comfort.

Contextual Factors

Context may play a defining role in whether nontraditional approaches are accepted and appreciated in the classroom. Probably more accurately, context interacts with other factors in the resulting "fate" of nontraditional activities. For example, the combination of doing MI-influenced thematic activities, displaying products, and ongoing reflection on and assessment of the learning activities seems to be the primary forces responsible for my students' changed perception. But I would argue that my relationship with students, my attitude, as well as the positive institutional aspects contributed to my students' appreciation for the role these more nontraditional activities played in their learning English.

I identify institutional factors (E) and teacher factors (D) as playing roles in students' ultimate acceptance of the nontraditional activities. In the cases of these two classes, the institutional contexts were supportive of my attempts to explore with the students the effectiveness of MI in the classroom: class size was moderate (12-17 students); closed enrollment allowed us to have a stable group for building trust and community. Also the institution determined classroom space: the students worked at tables so they had enough space to do projects and the tables were in a U shape which facilitated conversations and building of community through being able to have eye contact. Both classrooms I have discussed allowed me to hang our class projects on the walls. These physical and situational contexts determined outside the classroom contributed to the potential of MI theory's effect.

DISCUSSION

As a result of collecting, analyzing and writing about so much data, I have learned a lot about my own teaching practice as well as my students as individuals and as learners. I believe that MI is a theory that can be applied to teaching ESOL students in a way that will help them to understand, practice and acquire language. However, it is not a universally applicable theory. Perhaps this is stating the obvious and we already know that of course it will not be effective in every situation. Historically in the language teaching field, there have been trends which many teachers have adopted into their practices in hopes of making their teaching more effective. The Audiolingual Method and Competency Based Education (CBE) have been two of these trends. While each has its factors to recommend it, we can see with hindsight that neither will be the answer to our language teaching questions. Theories and new approaches must be interpreted critically and individually by practitioners who take the time to evaluate and problem pose the theories and assumptions which underlie these methods as well as the effect of these practices on their students. As a theory which is recently being adopted and researched in the field of adult education, MI and its practice need to be treated in the same way.

For me, MI theory was not needed. It might be that creative teachers, who do not have a lot of knowledge of other theories of adult education, second language acquisition and ESOL methods to inform their teaching, would grasp and assimilate to MI theory quickly because it explains, validates, and gives a language to describe what they are doing and seeing as successful. For these teachers, the effect of MI theory itself might be greater because it does encourage teachers to use diverse approaches to the curriculum, value their learners' strengths, and work with learners towards understanding how they learn.

But for me, I already had language to talk about what I do and why I do it. A member of the AMI Advisory Council said "MI is only one thing under the umbrella of what informs teaching. It is not the umbrella itself." This is true for me and the way I see it. It is only one aspect that I draw on that is under the umbrella of my teaching (teacher journal, 11/97). For teachers like me who do already have a strong theoretical base, MI may simply be one thing they add to their list of inspirations in lesson planning.

Contextual Factors

In advising other teachers, I feel it is important to detail some of the contextual factors which can determine MI's usefulness as a lens through which to look at a teaching practice and design curricula. I hope that this information will be of use for other teachers who wish to use MI theory to inform their work. The main point is that there are many factors in our classrooms and outside of them that we cannot control, and some of these may influence the receptivity of students to activities and curricula that are designed in the spirit of MI.

I have not thus far discussed data collection or the context of my class in the Spring semester of '98, the third semester of my research. This class was a continuation of the BHCC class from the Fall semester, with about half of the same students and half new students. From the beginning of my work with this class, I struggled with the contextual factors I saw influencing this group, and found myself bumping up against them on so many fronts that it was not in the best interest of my work with this class to emphasize MI or look at my work in the class through an MI lens.

The social and institutional contexts of my class were not conducive to emphasizing MI and the thematic units, project-based activities, visibility of projects, assessments, and building of community that had created a space for students' acceptance of non-traditional methods of teaching and learning. The following excerpts are taken from my journal, as I did not collect data from students in this semester.

A) Students" prior educational experience
I had a partially new group of students from the other teacher in the program. She uses traditional teacher methods and creates a traditional teacher/student power dynamic in the class. The students demanded the use of a book at the beginning of the semester so strongly that for the first time in all my teaching, I gave in and used one.

This was a contextual factor that greatly influenced the possible effect of MI, in terms of my trying to develop activities that were in the spirit of MI, and in terms of the students" ability to change their experience with and receptivity to nontraditional work in the class. Using a book for the first time presented me with challenges, especially in the area of my evolving interpretation of MI. It was difficult to develop thematic units the way I had done before, using songs, literature, process writing and creative group projects because the students wanted to work from the book as opposed to focusing on the other materials I brought in which connected with the books" themes. The only supplementary materials they requested were in the area of grammar practice.

B) Socioeconomic context of students and C) Students" investment/motivation: I quote from my journal in March 1998:

> *"What can I say, this class has 25 students, and three of them are very tired from having worked the night shift the night before. Two are pregnant for the first time, so they are also tired and distracted. One just got married. I have a lot of competition. I can"t do much of anything that they will all be interested in or think is helpful. It"s hard on me" (teacher journal, 3/98).*

And later on in the semester a student had a seizure in class and had to go to the hospital. I reflected on the often relatively small contextual role that English class plays in some of my students' lives. I pondered the conflict between their priorities and mine in my journal:

> *"I went to visit him and that was a heavy scene in itself, and after that, I thought that I really have no idea of all the problems that my students face in their lives outside of the class, and my multifaceted worries over how they learn or don't learn are really only connected to a very small part of their lives, even if to me they seem like huge issues.*

This puts the metacognitive inquiry into perspective, because really, although they really do want to learn English, they don't have lives that offer them the opportunity to give this task priority focus. I am looking at a tiny part of a tiny part of their lives and asking them to look at it with me. And the students, when they are in class, they don't want to stray or digress or read things that don't seem relevant in an immediate way to their goal -- learning English. This is after all only one thing that is going on for them, and even if it is important, it is on a physical and tangible level, like 'can I get a better job now, yes or no?,' not on the level of theory about issues of teaching and learning, not on the level of literature and poetry and art, not on the level of 'What are my learning strengths and how does my mind work to solve problems and can this help me learn English any faster or better?' It just isn't. They only see 'I want to learn English so I can get a better job.' Extrinsic motivation. That's why they came here and left their beloved homelands and families, even leaving young children behind. That's why they put up with wrenching loss and cold and estrangement. To get a better job and make money. Opportunity. They see English as the ticket to that. Other functions are side streets with nothing on them but empty shacks, not interesting when the store, laundromat, and work to earn money are on the main drag. That"s why they like tests and dictations and grammar. They are measurable. They show them that they are making progress and learning" (teacher journal, 3/98).

(E) Institutional constraints

I had 27 students in the class, which is generally considered to be too many for an effective ESOL class. Also, the students sat in rows because in our new school there are big heavy tables which cannot be moved into a U shape easily at the beginning and end of each class. The students could not hear each other when we conversed as a whole class which made it difficult to build a community. They were able to bond with each other mainly on the level of small group work. Additionally, in our new building, we were not able to hang things on the walls. Finally in April I wore down the building manager and was able to hang our collage project on the wall, but there was no cumulative effect of this process as I had seen in the last semester.

CONCLUSION

MI theory supports good ESOL teaching, but here at the conclusion of my research, it remains only one theory that is under my "umbrella." I am left with many questions as to how relevant it is to my teaching context. As with the consideration of any theory, it is important that the teacher consider the contextual factors which are at work in her class and think critically about MI and how it integrates with her practice.

I have shown how I myself struggled to find a way to interpret the theory in a way that would in the end turn out to be effective for myself and my students. Maybe I"m slow, but this has taken a year and a half of research, the questions are still very large for me. The most important things that I will take away from my work on this project is the realization that critical interpretation of theories is essential, it takes time, and that I need to trust and heed my own instincts, hunches and background as a teacher.

It has been worth my struggles to implement project-based learning and to do the assessments of students' feelings of the value of the diverse activities we did in the class. Although these things were effective, in the future, I will choose to do them in moderation. Ultimately, I still continue to struggle with the mesh of the constraints of doing teacher research and the student centered focus of participatory education.

For me, the most valuable part of the entire project that I would want to share with other teachers is the process of keeping a detailed journal. It showed me the ups and downs of teaching: the cycles that my students, curricula planning and activities had. The journal helped me to brainstorm themes and activities that I wanted to develop so that they would be the most helpful in my teaching context. It was a place for me to really puzzle out the connection between teaching theories and my practice, as well as between second language acquisition and cross-cultural theories and my students. It provided a forum in which to work out my struggles to be a better teacher and was a place to explore issues that came up as I tried to develop a participatory model in my class. The journal enabled me to be a more thoughtful, articulate and effective teacher and teacher researcher.

Research generates further research. I have had astounding successes and magnificent failures which leave me with new questions and issues to explore, not only about MI, but about adult ESOL pedagogy, students, and my role as a teacher in general. This is not a factor particular to MI; I feel quite sure I would be left with as many questions after a year and a half of this much research on any theory in connection to my practice.

Wendy Quiñones

ABSTRACT

As an instructor in a program that helps disadvantaged women identify and take steps toward personal and professional goals, Wendy Quiñones had met with some success using the popular education approach where the overarching goal is social action. For her project, she wonders whether MI theory might enhance her teaching, asking "Will use of a multiple intelligences framework support the goals and practice of popular education in an ABE classroom?"

Wendy considers the key aspects of popular education, such as developing self-respect and respect toward others, facilitating student empowerment, creating an environment based on democratic principles, and using non-traditional and "problem-posing" pedagogical approaches. Towards those ends, Wendy facilitates students' self-assessment and recognition of their own and their peers' intellectual strengths. She creates opportunities for student choice and decision-making in the classroom, and integrates more hands-on and real-world activities in her teaching.

Perhaps the highlight of her MI-informed activities is giving students opportunities to demonstrate their understanding of key concepts through MI-informed projects of their choosing. For example, students write and perform a skit about patriarchal mental health models, create three-dimensional artwork demonstrating images of women, use timelines, graphs, and other graphic organizers to present historical information about women's lives.

Wendy's hunch of a "natural fit" between MI-informed approaches and popular education is validated in her study. She finds MI theory supports her efforts in ways that enhance her teaching methods and the classes' popular education-based goals and strategies. She identifies four related findings: 1) using a multiple intelligences-informed approach helps her align her teaching more closely to popular education principles; 2) using an MI-informed approach creates empowering opportunities for students; 3) an MI framework promotes a more democratic classroom environment; and 4) MI-informed practices serve to increase students' positive sense of self and appreciation of others, promoting respect and interdependence, key elements of popular education.

Through her efforts on the AMI Study, Wendy discovers that it is not only her students who have been powerfully effected: "I feel that both my understanding and my practice have been transformed, and that as a result I am much closer to the kind of teacher I want to be than I was just 18 months ago."

Wendy Quiñones

RESEARCH QUESTION

> *Will the use of a multiple intelligences framework support the goals and practices of popular education in an ABE classroom?*

At the time of this research, I was associate program coordinator and a teacher at the Veronese Community Education Resource Center at Wellspring House, Inc. in Gloucester, Massachusetts. Both as an individual and in my professional role, I am committed to the philosophy and practice of popular education. Popular education to me is education that empowers and joins together oppressed and otherwise powerless people so they may collectively improve both their own condition and that of the world around them.

My research question involved the combination of the multiple intelligences and popular education frameworks: "Will use of a multiple intelligences framework support the goals and practice of popular education in an ABE classroom?" The multiple intelligences theory – from what little I knew of it when I began this project – seemed like a natural fit with popular education pedagogy. Popular education assumes that adults seeking education already know a great deal through their life experience, and that the primary role of education is to help them learn to think critically about that experience and about the world around them.

Because the goal of popular education is social change, I was at first interested in whether using the multiple intelligences framework would enhance students' active participation in their community. In my previous six years of teaching with popular education methods, I had had good success in encouraging personal change among the women in my courses. I had, however, hoped for more socially-directed change and had been disappointed in the results. As I began this project, I asked whether the use of an MI framework would enable learners not only to make changes within themselves, but also to change the world around them. It soon became apparent, however, that virtually every aspect of my teaching – not merely the use of MI – was now directed toward that goal in a way markedly different from my previous work. I abandoned this question when it became obvious that it would be difficult if not impossible to determine whether any observed actions would be attributable to MI or to other changes in my teaching.

At the same time, I observed a much more powerful synergy between the two frameworks than I had expected. I chose to redefine my research question to examine this relationship, and to study the ways in which MI can support popular education.

RESEARCH CONTEXT

My program, called Foundations, was offered free of charge to women of limited income or who were otherwise in transition. Lasting for 26 weeks, 20 hours a week, the program was situated in the Veronese Community Education Resource Center, the education arm of Wellspring House, Inc., a private non-profit organization. Gloucester is a coastal city of about 28,000 roughly 40 miles north of Boston. For many years an important fishing port, Gloucester's economy has declined significantly with the downturn in the fishing industry. Its unemployment rate is historically about double the state average, and it has a relatively high rate of drug and alcohol abuse.

Foundations was intended to be a transitional year in women's lives, with the objective of helping them to identify and take steps toward their own future goals. It combined and integrated segments of academic skill-building (reading, writing, math), with personal growth, teamwork, critical thinking, career exploration, and a large component of computer skills. Like Wellspring House as a whole, Foundations had a strongly feminist and grassroots democratic philosophical base. For example, I did my MI research primarily in a semester-long course on women's history called "Women at the Center." Unlike a course which concentrated on historical events and specific people, this course was conceived of more as a reflection on women's lives through history, with emphasis on women's resistance to the forces which have historically oppressed them. The purpose of structuring the course in this manner was to give women a stronger sense of their own place in the world and their own ability to take action to change it.

Our students were women in the community, a few of whom had been guests in Wellspring's small emergency family shelter, some of whom had participated in other Wellspring programs, and some of whom were recruited through newspaper articles, flyers, or other means of publicity. Both years, about half of the students were receiving public assistance, and with welfare reform faced severe time constraints on their source of income. Perhaps a quarter of our students were in recovery from drug or alcohol habits. It also became apparent during the program, although we never asked directly, both that some students had been victims of domestic violence and/or sexual abuse and that more than a few suffered from different intensities of depression (one student was hospitalized for a time; perhaps half-a-dozen spoke of taking anti-depressant medication; probably as many as a quarter to a third demonstrated some symptoms of depression). The overwhelming majority were single mothers, although each year there were one or two without children and one or two with partners. All but four of our graduates entered the program with high school diplomas or GEDs (although this did not necessarily mean they had good academic skills), perhaps 10% had some college, and all but two or three had significant work experience. They were, nevertheless, looking for a direction for their lives and the education to earn a living wage for their families.

There was a sharp difference between the two classes I studied. The class of 1996-97 began with 16 women, most of them near or over 30 (three were in their early 20s and one was in her 50s). In the second year's class of 1997-98, more of the 21 women we recruited into this class were in their 20s, and many were Gloucester natives with limited experience of life "over the bridge," as residents of this island community refer to the world outside. The teachers often speculated that the difference between the two classes may have been due to the effects of welfare reform. Caseloads in Massachusetts have dropped precipitously since time limits and other new regulations went into effect in 1995, with those who could opting to leave a system which was becoming ever more restrictive and punitive. As a result, those women still on welfare tend to be younger, less skilled, and with less life experience than previously was the case.

EVOLUTION OF MY WORK AND THINKING

I began the project with only the sketchiest knowledge of MI theory. My program has always explicitly identified and encouraged different learning styles and personality types, so the notion that people learn and function in many different ways was a comfortable one for both me and my students. Also, the theory had additional credibility for me because several elementary schools in Gloucester have adopted MI into their curricula, and my own children's elementary school operates within a similar framework. I felt, however, that my teaching practice to this point had been constrained by my own overwhelming preference for linguistic methods and so had not taken as much advantage as I would have liked of the non-traditional teaching methods available through popular education.

At first I relied for my knowledge of MI primarily on what the teacher-researchers learned during our first AMI Institute. I was far less interested in details of the theory than in how I could apply it in the classroom. I did have to understand enough theory to explain it to my students; both our popular education pedagogy and our program's explicit goal of teaching our students how to learn called for me to explain both what I was doing and why I was doing it that way.

I found Bruce Campbell's *Multiple Intelligences Handbook* an extremely useful entry into the theory through an examination of its application in his elementary classroom. He sets out in his lesson plans ideas for projects in each of the intelligences, and I found these helpful, both for ideas about the wording of problems and questions posed to students and for raising issues that I with my strong linguistic orientation would never have come up with. This was particularly helpful when I was doubtful about being able to teach through my own weaker intelligences. Discovering that students with different intelligences could learn through certain types of assignments even though I myself might not be able to do them (at least not well) broadened enormously for me both the range and educational value of possible classroom activities.

Like the other teacher-researchers, I was at first very concerned with the idea of assessing students' individual intelligences profiles. This seems, at least for me, to have been a stage in beginning to understand MI and how it functioned in my classroom. I asked what intelligences were represented among my students. How could I use those that were already strong and help people explore others that were relatively weak? How would a knowledge of my students' intelligences inform my teaching? Although I struggled with this for some time, in the end it seemed to me that individual assessments held little promise for my teaching setting; I simply had too many students and too little time to develop individual education plans for each of them. I was left wondering about the purpose of intelligences profiles. Did the students or I need them at all? This question was answered for me in a comment made by Thomas Armstrong (author of *Seven Kinds of Smart*) and reported by one of the other teacher-researchers: "The single most important aspect of MI is passing the awareness of individual profiles on to your students," Armstrong said. "This way they can use it, apply it, and gain greater control of their lives and learning through their strengths." (EMAIL FROM DIANE, 4/10/97) With this in mind, I chose to use an intelligences self-assessment tool developed by one of the other AMI teacher-researchers (Costanzo 1997). For this informal assessment, students listen to descriptions of typical behaviors, abilities, and interests associated with each intelligence and rate themselves on each. My students then transposed those ratings to individual charts which were posted in the classroom for several months.

Used in this way, individual profiles conformed to what I believe the classroom use of MI is about: the validation and strengthening of different ways for students to learn and demonstrate their learning. Both the popular education philosophy and my classroom experiences guided how I interpreted and used MI in my setting. My work on this AMI project gave me a greatly enhanced ability to live up to the philosophy of popular education I espouse, through the use of an MI-based classroom pedagogy.

METHODS

I used a variety of data collection methods, some of my own design and some more standard methods:

- **Teacher journal** (referred to hereafter as TJ): These journals were written periodically, sometimes immediately after the class or event in question, and sometimes later. They recorded events, reflections, questions.
- **Learning logs** (LL): Students wrote in these logs (sample attached) during language arts classes during the first semester of the 1997-98 program year. They were designed to record each student's activities, her reflections on her learning, and with whom she worked.
- **Class notes** (CN): My contemporaneous notes written during class.
- **Program evaluation** (PE): At the end of the 1996-97 program year, students wrote evaluations of the total Foundations Program, including both segments that had been influenced by MI and those that had not.
- **Dialogue journal** (DJ): During the second semesters of both years, students kept dialogue journals, writing in them once a week during the language arts segment of the program. Either I or my regular volunteer responded to what they wrote.
- **Final Evaluation** (FE): In both class years, students answered qualitative questions in a final evaluation of the women's history segment, the primary setting for my multiple intelligences work.
- **Observation log**: At the beginning of the project, I was particularly concerned to develop individual student intelligences profiles, thinking that they would be useful to me in individualizing my teaching. I devised this log as an assessment tool for keeping track of intelligences that students displayed during class or in their assignments. I used these logs for some months, but time constraints made this impractical. I discontinued this assessment tool the second year for these reasons and because it became apparent that deducing specific intelligences from activities was highly subjective.

FINDINGS

From my research, I can say without any reservations that the multiple intelligences framework is a powerful and effective support for the goals and practice of popular education.

Finding 1: Use of an MI framework helped me to extend my teaching to conform more closely to what I consider good popular education practices.

Popular education is education directed toward social change. My thinking about this has been profoundly influenced by the work of Paulo Freire, the late Brazilian educator who formulated popular education's principles and practice in 1970 with his book *Pedagogy of the Oppressed.* Popular education seeks "to build the capacity for democratic social change through education," to promote in its participants a "social transformation toward full human participation in society." (Hurst, 1995) Its methods as well as its philosophy are democratic: "Popular education is, at root, the empowerment of adults through democratically structured cooperative study and action, directed toward achieving more just and peaceful societies within a life sustaining global environment" (Hurst). Additional important resources for my understanding of popular education included *Teaching to Transgress* by bell hooks, *Unearthing Seeds of Fire* by Frank Adams with Myles Horton, *Training for Transformation* by Anne Hope and Sally Timmel, and Freire's recent *Pedagogy of Hope.*

My data demonstrate that the use of a multiple intelligences framework in a popular education classroom:

- helped me to extend my teaching to conform more closely to what I consider good popular education practices.
- encouraged practices that created opportunities for increased student empowerment and collective action, a key popular education principle.
- promoted a more democratic environment through increased power sharing among students and teacher.
- provided students with tangible evidence both that others have strengths which they lack, and that they themselves have strengths - perhaps never before acknowledged or valued - which others lack. This in turn allowed for an increased sense of both self and others, promoting the kind of respect and interdependence prerequisite to the social action that popular education aims to produce.

The popular education learning environment itself is a nurturing and democratic one in which learners experience –sometimes for the first time – being valued as human beings with important knowledge, experience, and opinions. They are taught not only the tools of learning but also of participation in the wider society (democratic decision-making, social analysis, reflection, and action, both collective and individual); participants are involved from the beginning in making decisions about the program's content and strture. Non-traditional teaching methods that promote both collective experience and different ways of individual learning – for example, drama, music, movement, action and research outside the classroom, individual and group reflection – are an integral part of popular education pedagogy. Learners' own experience both in their lives and in the learning itself constitutes much of the content of a popular education program, and their experience is explicitly linked to the historical development of the society they inhabit. (Reed, 1983)

Popular education begins with the premise that people always have knowledge, even though it may be based on thinking that is "superstitious and naïve" (Freire 1993, p.89) rather than critical and analytical. It rejects the idea of the student as an empty vessel into which the teacher pours knowledge. Rather, popular education assumes that student and teacher together create new knowledge through dialogue. It begins with a position of respect for the student's knowledge and world view, and assumes that both student and teacher have much to learn through their dialogue. In other words, the popular education practitioner begins from the expectation that education is a mutual exchange, and that students have valuable knowledge and insight to bring to it. In my experience, this expectation in itself is likely to encourage students to accept this view of themselves, thereby empowering them.

I find the multiple intelligences framework also to be inherently empowering. Although it is at root a psychological theory rather than an educational one, MI like popular education assumes that learning is both an active and an interactive process. In a specifically educational setting, then, it would, like popular education, call for rejection of the model of passive student receiving knowledge from active teacher. MI suggests that students have their own strengths to bring to the educational interaction. Identifying, validating, and encouraging the use of those strengths – which in many cases have been ignored or discouraged by previous educational experiences – again demonstrate the expectation that strengths exist, and so calls them forth. In both years of the study, my students came to have new confidence in their abilities almost as soon as MI was formally introduced. Roberta, for example, had steadfastly refused to acknowledge that her strong spatial intelligence was significant. She began to think differently about herself when she saw in the graphs of intelligence profiles that hers was visibly different from others. "I knew I was spatial," she said. "I just thought everybody else was, too." (TJ10/29/97)

Placing MI theory into an educational setting demands diverse methods of learning and teaching. Popular education, at least in part because of its roots teaching basic literacy to peasants in developing countries, similarly emphasizes the use of non-traditional teaching methods and materials as a way of treating subjects and concepts more complex than the learners' written language skills could accommodate. Although I had always used some non-traditional teaching methods, my own overwhelming linguistic preference tended to limit how often and how far I went beyond reading and talk. Accepting MI as a fundamental part of my pedagogy necessitated venturing beyond the paths I had previously trod.

The effects of doing so were quickly apparent. Preparing for a women's history class in the first year, for example, I became aware that my unit on the history of housework involved me standing up and talking about it. Thinking, "Oh, I better put some MI stuff in here," I made overheads of some of the photographs I'd found in my reading. Then applying popular education's problem-posing methodology, I decided to ask students questions about what they were seeing rather than telling them what I wanted them to see. No prior knowledge was assumed (where it was required, I supplied it); everyone had an equal chance to see and discuss the material in the overheads. Looking at a drawing of a family at a Colonial cooking fire, for example, I asked:

> Who is doing the cooking? Who is bringing the firewood? Who cuts and stacks the firewood? Who keeps the fire going? With the equipment you can see, how many different dishes would be involved in a meal? How much

> preparation will be involved in making it? Where do the foodstuffs come from? Who grows/makes/ grinds/transports each of them? Which jobs are essential to the family's survival? Which jobs produce income? And so on.

This combination of MI and popular education – to my surprise – turned what could have been a simple lecture into a true experience. It wasn't "being there," of course – but it did give students the experience of searching the scene for themselves, discovering, sharing, testing the meanings they found in the picture, potentially calling on a variety of intelligences. That experience in turn served as a source of knowledge a few minutes later as they considered similar questions about a photograph of an aproned housewife standing alone beside her huge iron cookstove. I didn't have to tell them about the contrast; they experienced it for themselves.

I reflected afterwards on my surprise at the power of the overheads, which I had seldom used previously. Even I could feel the difference between merely talking about this subject and experiencing it visually. For the more spatially oriented, this must have been quite powerful – and indeed, our most spatial student, Gwen, mentioned these overheads specifically in her evaluation of the course: "I really enjoyed the slides that related to housework – the early fireplaces, as opposed to the complicated stoves …to put knowledge into a spatial context I can "see" and "feel" what I am learning … is much more effective for me" (FE97).

This is, I think, one of the clearest lessons to me of the way in which using an MI framework can support and inform popular education. In Freire's way of thinking, the role of the teacher in popular education is less to teach than to provide structured opportunities for students to learn. In his own ponderous vocabulary, students must become "cognizing subjects," rather than "objects upon which the discourse of the educator impinges." (Freire, 1994, p. 46) In other words, I could tell them that in Colonial times every member of the family was involved in what we would now call "housework" – or I could show them a picture and ask them to figure that out for themselves – which incidentally leaves room for them to have insights that I haven't had (and the more spatial of them certainly did!).

Providing learning experiences which students could process through their preferred intelligences had another benefit of particular relevance to popular education: Use of the MI framework permitted me to use diverse means of teaching about social change – the primary objective of popular education – which proved to be extraordinarily effective. The study of women's history in a program dedicated to empowering women is essential, according to Freire's theory: "No pedagogy which is truly liberating can remain distant from the oppressed by treating them as unfortunates and by presenting for their emulation models from among the oppressors. The oppressed must be their own example in the struggle for their redemption" (1993, p. 36). In their final evaluation students testified to the value of this strategy:

> ***Edna**: "I learned of many women in history trying, struggling to achieve change through a different lens. I learned we can take charge of our lives now and tomorrow."*
>
> ***Pat:** "I have learned about many great women through this course. This has made me stronger as a person. Before this class I had no women role models."*

> ***Gwen:*** *"The course familiarized me with alternatives. The women that we learned about all dared to be different, and dared to be themselves."*

It is also critical, says Freire, for learners to become aware that their prior understandings had been incomplete or distorted (1993, p. 95-6). The personal and powerful links to their own history which they established through MI-informed activities permitted them to come to this knowledge themselves. By imaginatively experiencing the history of women through their multiple intelligences, rather than merely studying it through books and lectures, my students were able to become conscious of themselves in the world "as persons or as members of an oppressed class" (Freire 1993, p. 28) and to establish powerful and emotional links with that class and its history. They could identify what knowledge was the result of an external ideology and what knowledge was the result of their authentic experience. One student comment in particular attests to the value of this discovery. In her final evaluation, Edna wrote, "Now I know why how we feel and see ourselves is sometimes so foreign feeling, is because it's not us, it's patriarchal assumptions." There could hardly be a better illustration of Freire's dictum that people begin to truly contribute to their own empowering education "only as they discover themselves to be 'hosts' of the oppressor" (Freire 1993, p. 30).

In this finding, I cannot report divergent cases. Certainly the level of understanding and connection differed among students – for some it was profound and life-changing, while for others it seemed more superficial and casual. But for all students, the connection was made, the study of their own history came to life and made sense in their lives. In their final evaluations, students in both years testified to their new understanding:

> ***Janie:*** *"I was amazed how little I knew. How our culture is patriarchal. How much I internalized that my position as a woman was my fault."*
>
> ***Pat:*** *"I had no idea why women were so oppressed and subordinate, before this course."*
>
> ***Sula:*** *"[Women's history] lifted the veil! Showed how we are marginalized and 'marked'."*
>
> ***Winnie:*** *"I knew it was a man's world but not to the extent that it actually is. I learned a great deal about how men are really afraid of women and because of this have to stay in control."*
>
> ***Sharon:*** *"We learned how men have treated women throughout history and how far we have come and how far we still need to go."*

This last student, Sharon, gave perhaps the best evidence for the power of teaching and learning social change materials through both MI and popular education. Asked in a language arts class near the end of the year for an essay on cause and effect, she produced the following, which she also read (shakily) at the graduation ceremony:

> *When I began Foundations I was very unsure of myself. I had no direction and no goals to speak of. Since I started this program, I have gained a lot of knowledge of women's history, poetry, and world events.*
>
> *I have learned different ways that I am smart. My creativity has grown and I have a lot more confidence in myself. As time goes by I'm realizing more and more than I am somebody, not just a dummy who dropped out of high school, got pregnant, and ended up on welfare.*
>
> *For the first time ever I feel that I have actually learned something. I am very proud to be a member and upcoming graduate of Foundations. It's been a long hard road since I started in September, but it has all been worth it. I actually like myself and I know now that my life isn't a dead end.*

Finding 2: Use of an MI framework encouraged practices that created opportunities for increased student empowerment and collective action, a key popular education principle.

In using the popular education methodology for six years before I began the AMI project, I saw many examples of individual student empowerment – people who declared that their participation in our programs increased their self-esteem and their ability to take active roles in their lives rather than merely being at the mercy of other people and events. Adding the multiple intelligences framework expanded this expectation of competency beyond self-esteem to students' sense of themselves as learners, possessing both intelligence and the ability to create important knowledge. Using MI, seeing their own strengths at work and having them acknowledged, gave students substantive evidence of their own efficacy, contributing to improved self-esteem. In an environment which combines these two frameworks, the expectation of competency therefore can increase exponentially – as can many students' ability to fulfill that expectation. A second-year student's comment made this point especially strongly:

> ***Sula:*** *"[MI] allowed me to be free to do the things I always wished to do, but never was allowed, by myself or others. Unbelievable!" (FE98)*

I had always had difficulty, however, expanding this individual empowerment into a sense of collective power and the possibility of collective action. MI's enlargement of my teaching practices permitted this directly with the second-year class: they had the opportunity of taking collective action and seeing it indeed at least partly transform the world. One of the students was involved in a trial over a sexual assault of which she had been the victim. Many students identified strongly with her situation, so we went to the trial as a class to support her. Her testimony was postponed to a later date; the class returned to court on that day. On this second visit, the students noticed the impact their presence had on the proceedings. Several, for instance, commented that our student looked far less nervous than she had the previous week, while the defendant looked far less sure of himself. "What a difference [our being here] made in her whole attitude. What a difference it made in HIS attitude!" said Sula. The students also felt and obviously enjoyed their strength in numbers:

Doris: *"We're going to fill the whole courtroom."*
Sula: *And there's nothing wrong with that, nothing wrong with that."*
Doris: *(singing) "We are women, hear us roar!"*
Sally: *(singing) "We are the women of Foundations!"*

At one point the court clerk indicated that he didn't know who the crowd was in the normally empty courtroom. Recalling this later, Barbara waved a clenched fist and declared, "We're Foundations!" Students' sense of the strength of women's presence was enhanced by the fact that both the judge and the district attorney were women, the DA in an advanced state of pregnancy.

Although, sadly, the case was not resolved in our student's favor, this experience was nonetheless a powerful demonstration of the interconnection between Gardner's intra- and interpersonal intelligences, of Freire's "I" and "not-I." Seeing themselves influence events as a group enabled each of them to see herself as an individual with the power to influence events. As Sula commented, referring to a classroom segment of the program, "This is what 'When Women Count' is all about – women's solidarity. This is the knitting of the blanket, the nice warm blanket for women." (TJ 12/11/97)

After our first visit, we integrated the experience into a language class, using students' perceptions of what happened as the basis for writing paragraphs. Asked for her reflections about the event, Sula wrote in her learning log "that courts suck, and it is nice to have friends around when the chips are down." (LL 12/5/97)

Even without the MI framework to support it, I'm certain that this empowering experience would have been a profound one for my students. What I'm not so certain of is that it would have taken place. MI's validation of different intelligences so enlarged my conception of what constitutes learning that I could regard this court visit as an activity that met the educational goals of my program, thereby permitting the very collective empowerment I had been struggling for so long to produce.

Finding 3: Use of the MI framework promoted a more democratic environment through increased power sharing among students and teacher.

This theme emerged early in my introduction of MI to my students. As a way of introducing multiple intelligences, the class was to watch a video of the feature movie *Educating Rita*, starring Michael Caine and Julie Waters. Before we watched it, I gave students a list of questions designed to address different intelligences (see Fig. 1). I asked them to pick two to keep in mind as they watched the film – questions that struck them as interesting, as easy, as something they would enjoy paying attention to. One of the questions I developed this way clarified for me the distinction between linguistic and non-linguistic approaches to problems: I asked for the floor plan of Rita's house. Now to ultralinguistic me, this seems almost silly – I don't care what the floor plan is, nor would I normally think to ask about it. For someone strongly spatial, however, this might be an extremely interesting project – and the point is that the floor plan would have to be deduced from the events in the movie. For the spatial person, this activity would involve her quite literally in putting these events into a perspective that makes deep sense to her. Understanding this enabled me to imagine how different intelligences might operate on the same information – or, if I couldn't quite imagine how they might operate, at least I could understand *that* they might operate differently. Further, I could appreciate that use of such intelligences would produce different but equally valid kinds of knowledge and insight than might be available through my primarily linguistic approach.

Imagining a student responding to the "floor plan" question led me to what in my popular education setting was perhaps an even more important insight: The student manipulating the movie's events using her spatial intelligence would be learning – but I would not be teaching her. In other words, teaching and learning are separable. An attractive problem could, by itself, provide an engaging learning opportunity; my intervention as a teacher imparting information might not be required. In fact, in my setting, the more I designed problems to reduce the need for my intervention, the more successful I would be as a teacher, because in this way I would transfer from teacher to student the power of selecting learning activities. This insight had a powerful effect on how I taught and organized my classroom from then on. I rejected the idea of using MI myself to make individualized lessons for the students and turned instead to having the students do it for themselves: I provided choices of classroom assignments and homework from among projects and problems which appealed to different intelligences.

I was, in other words, creating opportunities not for teaching but for learning. What was important wasn't my ability to teach through those intelligences, but rather my students' opportunity to learn through them. It no longer mattered whether I was strong in them or not; what mattered were the students' strengths. I continued to use the method of providing MI-based questions in advance of certain experiences such as a video of Stephen Sondheim's musical, *Into the Woods*, and a field trip to the Lowell National Historical Park. This encouraged students, I think, to experience some events differently than they might have otherwise, and to look at and for aspects that might not otherwise have come to the surface. For example, during a unit of studying textile workers at the beginnings of American industrialization, we took a field trip to the restored mill complex in Lowell, Massachusetts. The questions I developed encouraged students to imagine their own feelings had they been mill girls (see Fig. 2). And although there had been no such question, one student led a group of her classmates in a run down four flights of the mill's spiral staircase because she wanted to know what that felt like.

These lists of questions directed toward specific intelligences correspond at least in part, I believe, to Freire's "problem-posing" educational methodology, as opposed to the more traditional teacher-directed educational methods he called "banking education." These questions are thus are a step toward what Freire terms "education for liberation." "Liberating education consists in acts of cognition, not transferals of information," Freire says (1993, p. 60). He adds that such problem-posing education is in itself a force for democratization in the classroom:

> *Indeed, problem-posing education… breaks with the vertical patterns characteristic of banking education…Through dialogue, the teacher-of-the-students and the students-of-the-teacher cease to exist and a new term emerges: teacher-student with students-teachers. The teacher is no longer merely the-one-who-teaches, but one who is himself taught in dialogue with the students, who in turn while being taught also teach. They become jointly responsible for a process in which all grow. In this process, arguments based on "authority" are no longer valid; in order to function, authority must be* on the side of *freedom, not* against *it. (p.61)*

In the first year, this change in the normal student-teacher dynamic became especially noticeable once I extended the strategy of choices among intelligence-based questions to be the standard homework model in my women's history course. Again, I was aiming to pose problems that would give my students opportunity to learn through the different intelligences, utterly without reference to the teacher's strengths, weaknesses, or preferences. With this in mind – and again with help from Campbell – I drew up a list of potential projects, sorted by intelligence, through which students could demonstrate their learning in my women's history class. (Campbell, 1994) Rather than give specific homework assignments, I asked students to "respond" to the week's topic with a project they felt was appropriate. In addition, student classroom activities often revolved around specific intelligences that I wanted people to use more than they did (pantomimes, for example, because few voluntarily used bodily-kinesthetic intelligences in their projects) or that I felt would lend interest to topics that might otherwise be boring (for instance, interpersonal activities for making timelines and learning specific dates). Rather than give any kind of final exam, I asked students to produce final projects using as many intelligences as they could.

A change in the teacher-student relationship in the classroom rapidly became apparent. The combination of assignments based on multiple intelligences with the strategy of allowing students to choose their own assignments was the best I have yet found for sharing power while giving students a firm structure within which to work (See Teacher Journal, 3/11/97). Acknowledging weaknesses in my own intelligences profile meant also acknowledging that I could probably not adequately teach in those areas. Rather than depending on potential (but questionable) improvement in my skills in those areas, I chose to depend on the students' own abilities and strengths, freeing them to use and explore these strengths as they chose. This felt to me to be a profound alteration in the student-teacher relationship, with me ceding a great deal of power over their learning to the students themselves, their own motivations, modalities, and interests. For students, this framework meant that the program was not only saying, but was also demonstrating that students themselves, rather than the teacher, are the authorities on how they learn best. It both permitted and underscored the validity of their own personal educational discoveries. Toward the end of the first year, I commented, "One of the things I so love about this (way of teaching) is that it lets me let go. It leaves much more of the learning up to the students, and I love that." (site visit interview, 5/20/97)

Student comments also emphasized the power they drew from their ability to choose their own assignments:

> ***Gwen:*** *"…the homework to this course was thoroughly enlightening and enjoyable. (I never thought that I'd say I enjoyed doing my homework, or that it enlivened me, rather than draining me…)" (FE97)*

> ***Helen:*** *"I loved this aspect [choice] of the method. It made it fun to do homework projects because it left so much freedom to be creative!" (FE97)*

> ***Barbara:*** *"The use of the multiple intelligences made everything much more interesting and fun. It was easier to learn when we got to choose what method was most comfortable to us." (FE98)*

In the second year, I expanded this approach to my language arts curriculum. Each 2 ½-hour weekly language arts unit included a 45-minute segment for "choice activities," during which students were free to choose activities that addressed both the areas they wished to learn and the intelligences they wanted to use. I organized potential activities in individual plastic file boxes, called "stations." Each contained activities and exercises in a specific language area: "mechanics" (grammar, punctuation, parts of speech, spelling, and so forth), "sentences," "paragraphs," "essays," and "critical reading." Each station contained folders labeled by intelligence/domain: Outdoors & Nature (naturalist); Conversations & Games (interpersonal); Drawing, Building, & Sculpting (spatial); Reading (linguistic); Charts, Graphs, Timelines (math-logic) ; Looking (spatial and intrapersonal); Acting & Dancing (bodily-kinesthetic); Music (musical); and Thinking (intrapersonal). Each folder contained as many activities as my volunteers and I could come up with, and students were free to choose activities to do alone or with others during this time. A student with spatial strength who needed work on sentence structure, for example, could choose to study a photograph or work of art, or walk outside and study the center's external environment, or have a conversation with another student on a topic of mutual interest, and then write a specified number of sentences about the experience. Although I suggested questions she might consider writing about, what she ultimately chose to write was up to her. In this example, I would be concerned only with whether she wrote complete and grammatically correct sentences.

My previous teaching method for teaching sentence structure would have been to decide when it was an appropriate topic and to address it with instruction from the front of the room. There would have been considerable discussion with the students, and I would have posed problems for them to solve, but these would have been problems about sentence structure with right and wrong answers. The choice and pace of the activity, as well as the precise content of the knowledge to be gained, would have been up to me as the teacher. Students who already had these sentence skills, as well as those who didn't already understand enough about parts of speech or grammatical structures to follow the discussion, would thus be forced into an activity that didn't fulfill their needs. Boredom and disruption are predictable in this situation.

After introducing choice activities, I still included this kind of teaching weekly as a brief "lesson of the day" on a specific language issue. But equivalent time, if not more, was devoted to the choice activities. While I provided the activities to choose among, students had leeway to pick the knowledge area to work on. I was no longer in control of choice or pace; students themselves had the power to make these decisions, all of which were explicitly identified in advance as valid.

Students also had much control over the kinds of knowledge they could gain from their work. Because this was a language arts class, there were of course specific areas of content that I wanted students to learn. But the activities themselves were structured so that students could gain many other types of knowledge from them. There were no preordained, right or wrong answers. For example, Roberta, the strongly spatial student noted above, once chose to examine a photograph and write a paragraph about what she saw. Obviously the content area being addressed was the skill of writing paragraphs. For the activity, Roberta wrote a competent and moving paragraph about the emotions the photograph had aroused in her. But later in her learning log, she also reflected: "I did a writing on a photograph that was very enlightening to me. I never [before] noticed too much detail in something, that someone else would just see as a picture." (LL11/21/97) Clearly, part of the knowledge she gained from this activity related to a dawning appreciation of and pleasure in her own strengths. Likewise, Gwen gained much from one of the women's history homework assignments she chose: "I loved reading about the forms of the old goddesses and then taking this information and creating a 'goddess' of my own, using red clay like the ancients, to symbolize the Life Blood. This was the most satisfying assignment for me" (FE97).

Students responded very positively to the introduction of choice activities, both because they enjoyed the activities themselves but also because they greatly appreciated the power to make their own choices. They demonstrated their enjoyment through positive verbal comments as well as through their intense engagement in the tasks they chose. While they were in use during the second year's language arts segment, even the least skilled and most disruptive students were able to achieve unusually long periods of intense concentration working on their chosen activities. In addition, they wrote of their delight in their learning logs:

> ***Sally:*** *"I like to choose what to do...I think we should do these activities at least twice a week." (11/12/97)*
>
> ***Barbara:*** *"I loved doing the choice activities. I like that we can do it in groups." (11/12/97)*
>
> ***Sula:*** *"I like the creativity of this class....I like to play with clay, and I love to play with words." (12/12/97)*
>
> ***Rose:*** *"I enjoyed [my choice activity] very much because it was on nature, something that interests me a lot and I would like to get a job in." (11/12/97)*

Once empowered, students were in fact quite vocal in claiming understanding of how they learned best and requesting that their needs be honored. During one language arts class, students expressed disappointment that they wouldn't be able to use play dough when I outlined the activity I had planned for the next time period. We went on to play dough instead. (TJ 11/26/97) In addition, when given the opportunity students freely expressed their own preferences for learning strategies:

> ***Judy:*** *"[I want] more hands on activities....I really feel I learn a lot faster if I can visualize or actually do what we're talking about." (PE 10/31/97)*
>
> ***Rose:*** *"[I want] more things you can do by yourself. I don't like working in groups, and it's easier for me to think [alone]." (PE 10/31/97)*
>
> ***Sally:*** *"[I want to] work in groups more because when we do we get more accomplished because there is more information and we can agree on it." (PE 10/31/97)*
>
> ***Winnie:*** *"I like working by myself a lot better than with other people. I can make my own decisions and do what I want. If I work in a group I feel like I am on the outside and don't really have much input. Usually I end up unsatisfied with the finished product." (LL12/12/97)*

In summary, the combination of MI-based activities and students choosing among them provided the opportunity for students to identify their learning preferences and mold their classroom reality according to those preferences, to learn through individually or collectively selected methods, and to create knowledge without predetermined boundaries. The classroom environment thus contrasted strongly to a classroom in which "knowledge and way of knowing are defined [and] the rules of knowing are assumed" (Everhart p. 86). Instead, the organization of MI activities into a system of choices meant for my students that their classroom reality was, to varying extents, "not 'known' or preordained…but rather…socially constructed and reconstructed as definitions, meanings and values [were] arrived at through collective communication" (Everhart p. 125). They were sharing with me the power of creating an area of their lives in which they could learn, and in developing learning methodologies for use both within and without the classroom. This was a much closer approximation of a democratically organized learning space than I had ever been able to achieve previously.This is not to say that either MI or popular education, together or separately, are infallible. Each year there were what I would observe to be divergent cases: students who continued to insist on teacher direction, who refused to break out of the old model of education, who refused to take individual power or responsibility outside of narrow classroom boundaries. Many of these students left very early in the program, apparently feeling uncomfortable with our pedagogy (we heard this only second-hand through those who did continue; the women who left were themselves almost always unwilling to talk with us about their reasons). At that early stage a complete MI framework hadn't even been introduced; we were simply using popular education methods, although in the second year these methods were certainly informed by my increased knowledge of MI. Perhaps if I had given an early explicit introduction of MI theory, those who were skeptical of our unorthodox approach might have been reassured of its value and therefore remained in the program. Perhaps not.

But even among those who stayed longer or even completed the program, there seemed to be at least one each year in whom I could observe little if any response to this changed environment. It is important to note, however, that my observations did not always match their own self-reports. In my observation of one first-year student, from beginning to end she very seldom contributed in class, her academic skills were lower than other students' and did not seem to improve significantly, and her homework was often quite immature and did not seem to change over the course of the program. Nevertheless, her primary goal had been simply to complete the program, and she herself took tremendous pride in the fact that she had succeeded in doing this. A second-year student who leaped at the opportunity for choice in classroom assignments, and who repeatedly spoke of how much easier it was for her to learn when she did it of her own choice, seemed unable to apply this lesson of power and responsibility beyond specific classroom assignments. Still, my observations do not coincide with her own report: "This course did enable me to take a more active role in my life," she wrote in her final evaluation.

Finding 4. Use of the MI framework provided students with tangible evidence both that others have strengths which they lack, and that they themselves have strengths – perhaps never before acknowledged or valued – which others lack. This in turn allowed for an increased sense of both self and others, promoting the kind of respect and interdependence prerequisite to the social action that popular education aims to produce.

One goal of popular education is to increase both interdependence among people and individual reflective skills so they may take informed collective action toward social change. Our program explicitly teaches these skills: by using specially designed exercises and activities; by alternating individual, small-group, and large-group work; and by inviting reflection on personal preference and efficacy, on what is accomplished in each setting and on how each person contributes to (or detracts from) the activity. Adding the MI framework, which validates many ways of learning, knowing, and demonstrating knowledge, makes it impossible to ignore the evidence that others have strengths which we ourselves lack, and makes the conclusion almost inescapable that working with others is at least sometimes advantageous. In addition, the MI framework's explicit attention to the personal intelligences validates popular education's emphasis on reflection and collective action.

Gardner discusses the role of the personal intelligences – in**tra**personal and in**ter**personal – extensively in *Frames of Mind* (1993). Intrapersonal intelligence, he says, represents "access to one's own feeling life," while interpersonal intelligence refers to "the ability to notice and make distinctions among other individuals" (p. 239). The two are bound tightly together, he adds: "Under ordinary circumstances, neither form of intelligence can develop without the other" (p. 241). The relationship between these two intelligences is intricate and complex. Although Gardner is referring to the development of children, I find his remarks applicable to my students: an individual , he says, may have "his [sic] own affective experiences, but it is the community that provides an essential point of reference and the necessary interpretive schemes for these affects. Accordingly, knowledge of one's place among others can come only from the external community: [one] is inextricably compelled to focus on others, as a clue to himself [sic]" (p. 248).

Similarly, Freire (1993) notes the importance of learners' perception of both an "I" and a "not-I"; in dialogue, each "I" recognizes "that it is precisely the *thou* ('not-I') which has called forth his or her own existence" (p. 148). In Freire's popular education theory, the purpose of this complex interrelationship is social action, the joining together of "human hands which work and, working, transform the world" (p.27).

In my previous use of popular education methodology, I had become accustomed to participants in my programs almost always speaking of increases in self-esteem as one of the chief benefits of their participation. This individual benefit was a strong feature for Foundations participants as well.

> ***Caitlyn:*** *"Foundations gave me the confidence in feeling good about myself and supporting me in such a way that allowed me to start thinking and observing life differently." (FE97)*
>
> ***Helen:*** *"This has been wonderful – I have come to 'own" who I am and won't let go ever again." (FE97)*
>
> ***Carolyn:*** *"I lost myself in a sense of who I was and the way I was. I now have found some of the old me and keep finding more." (DJ 4/11/97)*

But the addition of the MI framework allowed students the powerful experience of identifying and appreciating strengths in others as well. Again, the viewing and discussion of *Educating Rita* was a turning point. Our discussion of the movie was incredibly rich, in part because the film itself engaged people in a very direct way. As one of them said, this is their story; they could relate profoundly to Rita and the events in her life. But allowing them at the outset to choose their own approach through MI-informed questions invited some students to participate in the discussion in ways they otherwise seldom had. They offered wonderful insights, and saw that others did not necessarily have the same ones – that everyone made genuine contributions to the discussion. For example, one normally quiet woman demonstrated a stunning spatial intelligence by citing detail after detail of color, clothing, jewelry – each one a significant commentary on the movie and on Rita's character. Among many other observations, she noted that Rita at times had red in her hair and clothes "so we could really see fire in her." She pointed out that Rita's shirts literally had blue or white collars, depending on whether she was doing manual or intellectual work, and that for the last half of the movie, Rita wore a dragonfly pin so that we would get the message that she was "really starting to fly."

In one of those rare but glorious moments, a different student picked up the conversation. "That's just a whole different way of thinking," she said. "I would never see all that. I wish I could do that." But a third student couldn't let things rest there. Turning to the second student, who is extremely musical, she said, "Yes, but you thought of all the music, how the beginning music added to the scene. And then you said there was that little 'ding' whenever Rita got a good idea." (I had thrown in a question about music as a sop to this and another very musical student; I myself hadn't remembered any!) All of us, then, saw that we did indeed notice and remember different things about the film, that all of these things were valid, that each of us would have missed wonderful, important things without the contributions of the others, and that each shared insight deepened all of our understanding of the film's themes. This exchange gave all of us, teachers included, a deep respect for each other's abilities. For this group, there couldn't have been a more graphic demonstration of both the validity and the value of multiple intelligences.

But it wasn't until the second class year that I began to understand how the explicit identification and encouragement of both personal intelligences contributed to the popular education goal of collective action. Before I introduced MI directly, students' comments were similar to those I had heard before, expressing increases in individual self-esteem. During a discussion at the end of the first week of the program, for example, students remarked on their growing sense of themselves: "This is the first time since my kids were born that I've felt like something more than a mother and a wife." "A lot of my questions were answered and validated. I feel comfortable." "It's making us look inside, deep within, and we all probably needed that." "This is the only [education] place that I've ever been that I'm not waiting to leave and depressed. I feel comfortable." One added a comment about her growing comfort within the group: "We got to know each other. That makes us feel more at ease." (CN 10/3/97, speakers unidentified)

Later in the year, however, after the explicit introduction of MI, students referred far more to their group experience in reflecting on the difference between Foundations and other educational experiences. One student, for instance, remarked how important it was for her to hear others' viewpoints, that hearing other people say things a few times helped her develop her own viewpoints. (PJ 11/14/97, speaker unidentified) Another student, addressing me during the same conversation, declared, "You care what we think…our ideas matter." Students also frequently commented on their enjoyment of working in groups on tasks they had chosen themselves:

> ***Barbara:*** *"Today we worked on a* Lyddie *poster [*Lyddie, *a novel by Katherine Paterson, Lodestar Books, 1991]. I had a lot of fun. I like working with other people on projects. I learned a lot by doing the Lyddie story in a poster." (LL 12/10/97)*

> **Sally:** *"I liked getting into groups and arranging the pictures of our group working on the line at the cotton mill. I thought it was fun and it refreshed my mind about the mill girls." (LL 10/31/97)*
>
> **Sally:** *"Today was a fun and exciting morning. I enjoyed working together on our project." (LL12/10/97)*

Students were directly experiencing the value and benefits of working collectively. They had seen these already in the court experience described earlier (see Finding 2) but I believe that experiencing them as well in an educational setting, which traditionally values independent work and competition, was particularly powerful for them.

DISCUSSION

It's difficult for me to overemphasize the impact this research and its findings have had on me as a teacher. I feel that both my understanding and my practice have been transformed, and that as a result I am much closer to the kind of teacher I want to be than I was just 18 months ago.

Most importantly for my research question, it became apparent that each framework validated the other. For example, I was intuitively certain that "non-traditional" or "multisensory" or "multimodal" methods of teaching were superior to a strict lecture-and-listen environment. Thus I had always been comfortable with popular education pedagogy, which uses many nontraditional methods of teaching and learning – drama, music, dance, art, and so on – because it was developed with and for an illiterate population. MI provides a clear theoretical rationale for using these nontraditional methods even with a literate population. I can no longer think of them even subconsciously as "fun extras" – they are central to the teaching and learning.

Likewise, popular education's requirement of more democratic power relationships in the classroom validated MI's identification and encouragement of different ways of knowing. Convinced of the value of diversity, I had always been comfortable with a vague notion of different learning styles and temperaments. Popular education provides a clear theoretical rationale for identifying, elevating, and acknowledging the equivalent value of these different ways of knowing. I can no longer think of democratic classroom organization as a "bonus" – it, too, is central to the teaching and learning.

It is their fundamental philosophical agreement, their position of respect for learners as active participants in education, that I think accounts for the deep compatibility of the frameworks of popular education and multiple intelligences. And it is the fact that both operate from a model of student competence rather than student deficit that I believe accounts for the powerful effect of their simultaneous use.

Perhaps the most important change to my teaching practice will be the huge enlargement of my own conception of what constitutes knowledge. As an overwhelmingly linguistic person, I had, for example, previously considered linguistic skill as a prerequisite at least for demonstrating, if not acquiring, knowledge. I had always tended to dismiss those who didn't write or speak well as simply not too smart, or too lazy to learn the rules, or something of the sort. Now, however, I understand that intelligences fall in different but equally valid areas, and that a lack in one does not imply a lack in another. With the evidence I have seen in my last two classes, I feel myself genuinely more respectful of non-linguistic intelligences, and more authentically motivated to provide opportunities for acquiring and demonstrating knowledge through them. In addition, I have learned to leave the boundaries of knowledge open. I may intend students to learn a certain body of knowledge – sentence structure, for example, or the fact that women's roles in history have been overlooked rather than nonexistent. By allowing them to approach these areas of knowledge in different ways, I must also acknowledge that students may learn (and so teach me) many other important and valuable things as well, whether they are connected to the ostensible subject at hand or to other insights.

In terms of applying MI in my classroom, I feel that using the structure of student choice is one of the most important aspects of its success. Allowing students some control over their learning reduces the almost inevitable human reaction against the imposition of authority, and encourages students to accept the validity of the activities they participate in. However, extending that control to a choice among mutually acceptable activities and settings allows far more individual control than is possible even in settings of consensual decision-making. Students who are ahead of or behind others in given subject areas are able to individualize their learning with a minimum of intervention (read: control) by the teacher. Students can be willing to undertake even the most boring of drills if they have chosen them for their own reasons; likewise, they can be wildly experimental and take otherwise unlikely risks if, for their own reasons, they feel themselves capable of this at a particular time.

NEW QUESTIONS/NEXT STEPS

I feel I have satisfactorily answered my primary research question in the affirmative. But many others remain about the combination of MI and popular education.

One of the most interesting to me involves the question of reducing student resistance to learning. Although I have discussed this question directly elsewhere (See Chapter 11 in Vol. I), neither my work nor that of others in this study sufficiently examines whether MI, by itself or in conjunction with popular education, is a possible means for bypassing many of the triggers for resistance. My own sense is that a popular education methodology eliminates much of the almost instinctive student reaction against authority through power-sharing, and that MI permits students and teachers to bypass damaged or blocked cognitive pathways (as the result of trauma, for example) as well as those which are the result of unacknowledged conflicts among goals (maintaining the subservient position required in an existing relationship, for instance, rather than expressing the independence gained through education). This leads to the question of knowledge transfer. A student's conflicts, for example, may prevent her from learning through pencil-and-paper tasks, but permit her to assimilate the same information if she makes a poster or a clay model. Will that knowledge transfer to unavoidable pencil-and-paper tasks?

Another question that I had hoped to investigate this year was the effect of asking students to work in groups based on either their strengths or their weaknesses. In an activity which contained both and allowed both students and teachers to reflect upon the differences between them, it appeared that working together in an area of collective weakness fostered greater group solidarity. Would task groups based on members' weaknesses promote solidarity if used with other activities? On the other hand, working in groups based on strengths appeared to enhance the retention of content. Would task groups based on members' strengths promote content retention if used with other activities? Both because of my own time constraints and the extremely uneven attendance patterns which characterized my class, I was unable to pursue this question, but it continues to hold considerable interest for me.

Finally, as my own activities broaden beyond classroom teaching, I wonder about the use of MI in other settings. Much of popular education is concerned with fairly explicit political organizing. In this country, organizing is most often accomplished with talk. Will people who are coming together to identify political goals and strategies accept MI-informed ways of working? In settings where I don't have the automatic authority of a "teacher" (however democratic) are there appropriate ways of bringing in these methods? This is a question I look forward to exploring.

FIGURE 1. SAMPLE QUESTIONS FOR EDUCATING RITA

1. What are Rita's feelings when Frank refuses to teach her?

2. What are some ways in which Frank's and Rita's relationship changes from the beginning to the end of the film?

3. What are some ways that Rita's appearance changes through the film? What does this say about her?

4. What are some ways in which this film affected your feelings about education and getting an education?

5. What are some lines in the film that struck you as memorable?

6. What is the floor plan of Rita's house? Of Frank's?

FIGURE 2. SAMPLE QUESTIONS FOR MILL VISIT

1. What repeated activities – for example, hearing bells, climbing stairs, operating machinery — did you notice in mill girls' lives? How many times would they repeat them during the course of a day, a week, a month, a year?

2. What sounds did you notice most in the mill?

3. What emotions did your experiences on the visit produce in you?

4. What parts of your body would feel the worst after a day in the mill? What could you do to make them feel better?

5. How would working in the mills affect a girl's relationships with her family at home?

Lezlie Rocka

ABSTRACT

Lezlie Rocka's research project, on which her colleague Louise Cherubini collaborated during the first six months, is driven by a quest to understand whether MI theory has anything to offer to their multisensory approach to teaching reading and writing at the low-intermediate level. Lezlie contrasts lessons that were initially designed using a multi-sensory approach to those after she integrated MI theory into her thinking. She realizes that multi-sensory teaching uses the senses to impart information, but it does not entail choices for students to express their understanding. One outcome or change is the addition of choices to the reading comprehension component of her curriculum.

> *We thought that if students were expressing and processing the information in as many ways as possible, this would assist them in using their strongest intelligences to understand the information. . .We began to consistently create lessons that were more interactive and action oriented. Students worked together, gave presentations, acted in skits, organized presentation charts, drew or sculpted scenes, etcetera. They seemed to comprehend the writing well enough that they could teach it to others.*

The choice based activities allowed Lezlie a much better view of her students' comprehension skills and strategies. She provides several examples from her classes that support her conclusion that "The application of MI theory in my reading lessons seemed to cause improvements in specific reading strategies, comprehension, retention, and interest in the reading." She notes that this progress was true for all but two of her students whom she suspects to have severe learning disabilities.

Lezlie Rocka

RESEARCH QUESTION

The Adult Multiple Intelligence research project required teacher researchers to design and pursue questions regarding the application of the Multiple Intelligence (MI) Theory in adult education. I created and researched the following questions:

1) How does knowledge of Multiple Intelligence Theory broaden a multi-sensory approach to the teaching of writing?

2) How does the application of Multiple Intelligence Theory enhance a multi-sensory approach to teaching reading?

1. How does knowledge of Multiple Intelligence Theory broaden a multi-sensory approach to the teaching of writing?

2. How does the application of Multiple Intelligence Theory enhance a multi-sensory approach to teaching reading

Allow me to explain why and how I came to choose these questions.

I am a teacher at Dorcas Place Parent Literacy Center in Providence, Rhode Island. Dorcas Place is a community-based adult literacy center providing comprehensive services to low-income, multicultural adult students. Dorcas Place stresses using education, self advocacy, and community involvement to pursue one's greatest potential.

Students at Dorcas Place are predominately single women with dependent children who receive public assistance. My students want to improve their lives and set a good example for their children. Most of them have a long range goal of passing the GED test. Most are dedicated students and work hard on their education.

My classroom generally consists of thirteen women, ages seventeen through forty-three. Most dropped out of school between seventh and eleventh grades. They are placed in my class because their reading and/or comprehension levels fall between third and fifth grades. Most of the women have learning difficulties due to emotional or physical factors, and or inappropriate instruction. Many students have learning disabilities evidenced by their decoding, encoding, letter reversal, and retrieval difficulties.

Our school year is split into four quarters each lasting eight weeks. At the end of each quarter new students may fill the spaces made available by students moving to the next level or attrition. By the end of the year I have usually had about thirty women enrolled in my class.

When I began teaching adults in 1995, I was introduced to a multi-sensory teaching approach by my coworker and mentor, Louise Cherubini (Louise was later my research partner for the first year of this project). A multi-sensory approach to teaching encourages students to utilize as many sensory pathways as possible when learning. Students learning to spell, especially those who may have learning difficulties, learn and remember words more efficiently when they see the word, hear the word, say the word, and are taught to be aware of how their muscles, vocal chords, and tongue feel when making certain sounds. The senses of smell and taste are also utilized to learn, for example tasting an apple when saying "A apple \a\." Writing a word with a pencil, writing it with a finger in the air, or tracing it on sandpaper and simultaneously spelling it out loud makes learning more efficient and aids the memory process. A multi-sensory approach compensates for inefficient sensory processing by involving all the senses in the learning process. It allows information to be transferred to the brain using many media thus providing the brain with more information from which to glean meaning and cause retention.

Last year Louise and I researched how applying MI Theory would broaden our multi-sensory approach to teaching writing. This year I focused on how applying MI Theory would enhance my multi-sensory approach to teaching reading comprehension and retention. Our research project together and then mine alone explored how instructional strategies were broadened by the application of MI Theory. These subjects were chosen because they embody two of the main content areas for which our students come to school. Our questions reflect the work we do in the classroom every day. Louise and I undertook this research project and I continued on with the hope that the MI Theory would help us teach more effectively.

EVOLUTION OF MY WORK AND THINKING

The First Year

Ever since I started teaching, I have been interested in improving my knowledge and skills. My goal is for my teaching to be as effective as possible.

While receiving my teacher training in 1991, I attended a workshop on Multiple Intelligences with David Lazear. He stressed teaching every lesson using as many intelligences as possible. He gave an example of his daughter who was active but had difficulty focusing on and understanding what she read at times. If she walked around while she was reading, she seemed to understand and retain the information better. He credited her improved understanding and retention to filtering the reading she was doing through an intelligence in which she excelled, bodily/kinesthetic. He said that Dr. Gardner's book Frames of Mind, supported what he experienced as making a positive difference with his daughter. And again he stressed teaching using as many media as possible because one of these is bound to help students learn in a way that suits them best.

The idea that we all have preferred ways of learning was not new to me. Individuals excel in different arenas and seem to learn best in different ways. Having students use their preferred way of processing and expressing to learn information made sense to me. From this point on I used this approach in any teaching I did: my student teaching, my experience as an elementary school teacher, and as an adult basic education teacher. I tried to include all the intelligences in each lesson. For example, if I was teaching multiplication tables, I would have students say the numbers chorally; march while saying the numbers, visualize the numbers, use a finger method for the sixes through the nines, and use mnemonics. It seemed to me that both a multi-sensory approach and what I understood about MI teaching supported each other. They both seemed to stress using all the senses.

It was Dr. Gardner's comments in the first AMI institute about some of the myths related to applying MI theory to teaching that began to transform how I had previously understood MI theory. He emphasized that teaching all subjects using all the intelligences may be ridiculous. For example, kids who are rolling on the ground while they do division may just be rolling on the ground. He highlighted that educators should draw on students' intelligences for solving realistic tasks.

I learned from Dr. Gardner that MI theory was not an approach like I had previously thought; it was a theory. What I had learned in my first workshop in 1991 on MI had made it seem like a multi-sensory approach, or at least that's what I had understood it to be. In the AMI project we as teacher researchers were to figure out what it meant to apply MI theory in our practice. So, how were we to do this?

Louise and I began by reading *7 Kinds of Smart* by Thomas Armstrong (1993.) His presentation and his application of the theory were easy to understand. We read Gardner's *Frames of Mind* (1991) and found it dense but informative. We also read countless articles that were interesting and inspiring *The Multiple Intelligence Handbook* by Bruce Campbell (1994.) But even after all our reading, Louise and I could not figure out how the application of MI theory differed from our multi-sensory approach. We couldn't tease out the difference between using a multi-sensory method and applying MI theory to teach. It seemed that what we were doing already reflected MI theory. We kept talking about it.

We eventually came to an understanding that MI theory is a psychological theory. It addresses what happens in the brain after information is transferred to it. Multi-sensory teaching is an approach to get information into the brain. The intelligences act on all the information the brain receives, no matter how it, the brain, receives this information. It seemed to us that by getting information to the brain via one or more senses that were congruous with the student's strongest intelligences would give the students a better chance of understanding the material. MI theory and the multi-sensory approach seemed to support one another. We felt validated in what we were already doing in the classroom. We also realized that there was more we could be doing with MI theory.

Louise suggested that we begin doing something we thought was completely based on MI Theory and forget whether it was different from multi-sensory teaching. Since our question addressed using MI theory to broaden our approach to teach writing we invented projects and activities in order for students to learn and express what they understood about writing. We thought that through learning activities our students might be able to use their strongest intelligences to express and process what they were learning about writing. We began with a project called Paragraph Players Theater in which students became parts of paragraphs and then presented and taught another class how to make paragraphs. It was quite successful in that the students enjoyed themselves and understood better how to write a paragraph. In the end, a notable change in our teaching was an increase in projects in which students learned in ways other than reading and writing and in which students taught each other.

During the second year Louise had to bow out of the project, and I decided to pursue a question about how applying MI Theory would enhance a multi-sensory approach to teaching reading. I experienced deja vu of the previous year when I tried to apply MI theory to my multi-sensory approach to teaching reading. I couldn't think of what to do other than my multi-sensory approach. Meg Costanzo, a fellow teacher researcher, suggested I add a "Choose 3" activity created by Martha Jean, another AMI colleague. In a "Choose 3" activity students are given choices of how they want to express what they know. Each choice correlates (as much as possible) with the way an intelligence might be applied. For example, someone who is stronger visually/spatially might choose to draw what they know. I was so excited to try this because it felt like I had been handed the missing piece. After trying one "Choose 3" activity and experiencing its usefulness, I integrated it into all the readings.

At about this point, I read an article by Bruce Pine called, "Meaning Through Motion: Kinesthetic English," (December 1995, English Journal Volume 84). Mr. Pine proposed that using the body to express text is valuable only when discussion follows. The meaning of what you are doing and why you are doing it in a specific way must be processed. This article validated changes that I had already been making in my teaching and reminded me to go even further: slow down, cover fewer subjects in class, and cover them deeply. This is necessary to cultivate metacognition (knowledge of why you are doing what you are doing). I think that this was what had been so successful with our writing project. When students could teach others how to write paragraphs, they then had that knowledge within them.

In January 1998, nine of my students moved to the next level. Four stayed with me, and ten new students were placed in my class. They were at a lower reading level and often weren't able to finish even one project after we read because they worked so slowly. This new group was quiet. They did not choose drama to express text. They chose drawing and writing most of the time and play dough only once. I wondered whether this less active type of expression was as useful.

I decided to take a new approach to doing projects. We would do them as we read instead of at the end of each reading. I thought this would introduce students to a wider variety of ways to process text. We would stop reading whenever something from the text suggested a way of expressing and processing the information, and we would explore it together. For example, while reading about Sojourner Truth, the author discussed all the places Sojourner Truth traveled on her freedom campaign. I had maps of the United States, and we figured out how to plot where Sojourner Truth had traveled. When the book indicated dialogue through quotes, we read the dialogue as if we were the people. We would often read it several times.

This is how I am applying MI theory in my classroom now. I know it will evolve as I have more information and experience to draw on.

METHODS

Data Collection: Year One (January - June, 1997)

During the first year our data collection consisted of:

- transcribed discussions about what we thought of the MI readings and of what our co-researchers said online, and how the application of MI Theory might or might not broaden a multi-sensory approach to writing
- outlines of our lesson plans
- notes on what happened in class, and our impressions

- copies of all student writing.
- direct quotes from students
- video tapes of selected classes
- notes and feedback from observers, Julie Viens and Janet Isserlis

Data Collection: Year Two (September, 1997 - March, 1998)

In year two I no longer had an on-site research partner, but I continued the previous year's data collection methods with some modifications and additions. I took notes during class, instead of afterward, on what was happening and recorded direct student quotes. I typed these up in a log at the end of the day. I included editorial notes on what seemed to work, what did not seem to work, my thoughts as to why, and possible ideas for revisions. I discussed my concerns, confusions, and questions as well as successes. I explored what I knew about MI theory, what I was learning about MI theory, and how applying MI theory was enhancing my multi-sensory approach to the teaching of reading.

A new data collection method in the second year was that I had my students keep reading logs in which they responded to what we were reading and what they thought would happen. They also wrote about how they liked what we were reading in dialogue journals, but by the end of the year, students were no longer doing the dialogue journals. These were too similar to the reading logs. I kept copies of students' writings and drawings and took pictures of their play dough sculptures. I photographed or video taped their skits and plays.

FINDINGS

Finding 1: We found that the application of MI theory did broaden a multi-sensory approach to teaching writing.

Evidence

The following lesson plan is a typical multi-sensory reading lesson before applying MI theory.

A Multi-sensory Writing Lesson: Writing Paragraphs
(I was introduced to the idea of using the hand as a guide to writing at a SABES workshop in New Bedford, MA in the Spring of 1996.)

Findings

- The application of MI theory did broaden a multi-sensory approach to teaching writing.
- The application of MI theory did enhance my multi-sensory approach to teaching reading.
- The application of MI theory in my reading lessons seemed to cause improvements in specific reading strategies, comprehension, retention, and interest in the reading.

> *Begin by saying that all you need to write a paragraph is your hand. Have students hold up their hands, then have students draw their right hand on note paper. "When you are asked to write a paragraph, first you need a thumb." Hold your thumb up in an "everything is A-OK!" position, and have students do the same. "Your thumb is the first sentence of a paragraph. It answers a question or makes a statement. It is the answer or main idea of a paragraph." Have students hold up their thumbs and*

say, "Answer sentence." On their note paper, have students write on their drawn hands in the thumb space: answer/ main idea sentence.

"To answer any question in writing, you need a complete sentence. You can even use the words from the question you are answering in your sentence. If you were asked to write about the following question, 'What is your mother-in-law like?' you could start your paragraph with an answer to this question." Linda, one of my students, wrote, "My mother-in-law is a wonderful person."

"Now you have answered the question, but someone who is reading your paragraph might want to know why you think the way you do. So, you have to write details about or reasons that support your first sentence. Your reasons why will be your index, middle and ring fingers of your paragraph." Have students hold up these three fingers and say, "Supporting sentences." On their note paper, have students write on their drawn hands in each of the three fingers: supporting/detail sentence. Also, color code the parts of a paragraph; use one color for the thumb and one color for the three fingers. "These three fingers must talk about the first sentence, the thumb. These also need to be complete sentences like the thumb sentence."

Linda wrote, "She is kind and lovable woman. She trieats me like a daughter. She thoughtful in many ways.[sic]"

Linda's complete paragraph was, "My mother-in-law is a wonderful person. She is kind and lovable woman. She trieats me like a daughter. She thoughtful in many ways.[sic]"

After students have written their own paragraphs, have them reread them and use their fingers as a guide to see if they have all the parts they need. Then have them underline each sentence with its corresponding color to see if they have all the parts they need.

Once students write a paragraph, look in books to see how authors organize their paragraphs. Students see that paragraphs are indented, that new sentences follow the previous period, and they notice the periods and capitals. For many of my students learning how to use all this information is new. Each time they write a paragraph they use their hand to check if they have everything necessary. My students get excited at the idea of writing a paragraph because it seems such a successful thing to be able to do.

Projects Based on MI Theory

Rather than change our multi-sensory approach when we started applying MI theory, Louise and I added projects and activities to aid students with learning paragraph writing. We thought that if students were expressing and processing the information in as many ways as possible, this would assist them in using their strongest intelligences to understand the information. Perhaps what distinguishes the following activities from what we did before the most is their interactive nature. By having students work together and coach each other they draw more on the interpersonal intelligence. They also engage the emotions by creating opportunities for humor and laughter.

Oral Paragraphs: We would say a paragraph about each person in the room. For example, "Rita looks pretty today. She has a nice hair-do. She has on a nice looking outfit. She also has a big smile on her face."

Paragraph Puzzles: Students cut up their paragraphs and other students tried to piece them together in the correct order.

More Paragraph Puzzles: I made two paragraphs on one subject giving a pro and a con view. Students unscrambled my paragraphs, and we discussed which paragraph was the best or right. We discussed that as long as you can support a main idea with three reason sentences (or three fingers), any opinion is valid.

Paragraph Playhouse Theater: My class performed as the Paragraph Puzzle Players for Louise's class. Our class wrote a paragraph together, edited it, then put in purposeful mistakes. We printed it on poster board, cut up the poster board into sentence strips, and each took sentence strips to hold up. Students then planned how they were going to scramble themselves up and figured out how they were going to give directions to Louise's class. The Master of Ceremonies made her own cue cards of what she wanted to say to Louise's class. She wanted them to know exactly what they had to do, "Hi, we are here to do a presentation about a paragraph puzzle. This puzzle is out of order. You'll have to guess which one is the main idea and which are the details. You guys need to put this puzzle in order. You guys need to figure out punctuation marks and correct spelling. Punctuation means capital letters." After this project Donna from my class said, "I understand a paragraph."

Writing Notes: Louise's class learned how to write a note, and then invited us into their class, using a note, to teach us how to write notes ourselves. Both our classes find this difficult (though my class at a third through fifth grade level is more advanced in reading and writing than Louise's). Often our students will ask us to write notes for them. We all received note paper. Louise's students suggested we write a note as if we had dropped by someone's house, and they were not home. They coached us through the process by asking questions like, what do you need at the top of your note? My students would answer, the date and the time. We each finished a note by following this question and answer process, and at the end everyone shared the note they had written. Everyone seemed pleased with what they had written based on the smiles on their faces. All of us left Louise's class with a well written note.

Once we added projects and activities to our multi-sensory lessons, we began to consistently create lessons that were more interactive and action oriented. Students worked together, gave presentations, acted in skits, organized presentation charts, drew or sculpted scenes, etcetera. They seemed to comprehend the writing well enough that they could teach it to others. We saw that while students were preparing to teach the writing, they learned it better themselves. Their preparation to teach and the actual teaching seemed to promote metacognitive awareness of the writing process. This awareness of the writing process seemed to assist students in applying their knowledge to writing.

Finding 2: I found that my application of MI theory did enhance my multi-sensory approach to teaching reading.

Evidence

The following lesson plan demonstrates how I took a multi-sensory reading lesson and enhanced it by applying MI Theory.

A Multi-sensory Reading Lesson

This was a typical multi-sensory reading lesson before applying MI theory.

> *Meet Addy by Connie Porter, Chapter 5*
> *This book is classified as historical fiction. It illustrates some of the experiences slaves had while trying to escape on the Underground Railroad. Addy, the main character, is a young teen born into slavery who escapes with her mother to freedom.*
>
> *I begin a group reading lesson with a pre-reading question based on what we have already read or what we are about to read. For example I ask students, do you think Addy and her Mama will make it to freedom? We then discuss or write about this.*
> *While reading, I coach students in applying all the multi-sensory skills they have already learned in order for them to decode and comprehend what they are reading. I remind them to use their finger, a pencil, or a bookmark to help guide their eyes. I make sure to allow students ample time to apply their decoding strategies before giving a prompt. I coach students on beginning or ending sounds of words when they need it. We discuss what we read after every paragraph. We discuss the meaning of difficult words. And, we reread the paragraph when necessary.*
> *When we finish reading, we do a post-reading activity. I ask students what they liked or didn't like about what we read. Students write about this. Then those who want to share their writing with the class do so.*

Choices based on MI Theory

Again I didn't change the multi-sensory approach; I added to it. I thought that through projects and activities students would be expressing and processing the information in as many ways as possible, and that this would assist them in using their strongest intelligences to understand the material. Students could choose among activities that gave different ways to express what they understood about the reading. They did these activities after doing the reading for the day. I call this choice expression. We did choice expression as part of every lesson. I varied the choices in order to allow students to process the reading using different intelligence strengths.

> *Post reading: Choose one to do alone, with a partner, or a group. Share what you worked on with the class.*
>
> 1. *Draw a picture or show in play dough any part of what we read.*
> 2. *Pick a song or a chant that would give you inspiration if you were doing something very scary. Write the words to the song or sing it.*
> 3. *Make your own map of Addy and Mama's journey either on paper or with play dough.*

4. *Write or discuss with someone a part of what we just read that you think is interesting.*
5. *Act out a part of what we just read.*
6. *List the places in which Addy and Mama hid on their escape to freedom.*
7. *Design your own project for this chapter.*

Looking back through our data, Louise and I were surprised that our lessons were not as active as we thought they had been before we added an approach based on MI Theory. We were able to see how multi-sensory teaching used the senses to impart information, but our students were not given choices as to how they preferred to express their understanding. We assumed that students would choose projects that correlated most closely with their strongest intelligences. Our MI-based approach allowed students to process information in different ways, and therefore students seemed to understand more and better.

Finding 3: The application of MI theory in my reading lessons seemed to cause improvements in specific reading strategies, comprehension, retention, and interest in the reading.

Evidence

Reading Strategy: Picking out details in a text
In the past we spent most of the reading time reading aloud and talking about the reading as a large group. But now a good chunk of the time was spent with students working independently or together rereading, planning, combing through the text for the information they wanted to learn more about. While it wasn't my explicit goal that students learn the specific reading strategy of picking out details from text, they were doing this on their own. Usually at my level students find this skill difficult, but it became a daily occurrence because they wanted information for their projects. Students chose to look through the text on their own. The reading material became a tool, as a means to an end and not the end in itself.
For example, I watched Renee and Lyn pick through the reading for information for their project which was to figure out the important dates in Sojourner Truth's life. They chose to list the dates when Sojourner Truth was sold and for how much she was sold. As they came across new information, they discussed its validity.

Comprehension and Retention
The choice-based projects seemed to cause a positive cycle of comprehension and retention. The students'comprehension seemed to improve when they processed the reading from their strengths. As they understood the reading better they remembered it better as well. The opportunities for expression in the classroom seemed to increase most students' retention of what they had understood from the reading. For example, some students chose to do a skit to express what they had understood in the reading. Doing the skit helped students understand better what was happening in the reading. Improved understanding helped them remember what they had read. It also seemed to help them understand subsequent sections or chapters.

I present Renee to you as a case in point. When I first started working with Renee her fears of appearing stupid, of not knowing how to do something, and of not understanding the material were palpable. The following entries are from my journal.

> On **9/25/97** Renee mumbled to her table mates through much of the reading. Later when I asked her to tell me what the paragraph was about, she said that she had zoned out and did not know. She seemed upset when I told the class that they had to write in their journals about how they felt about what they were reading. She did not want to discuss it at that time. Students then wrote about what they understood and liked in the story. Renee said she had difficulty understanding what she read with the group, so she would try reading the same book to herself the next day. She later talked to me about zoning out, and how that frustrated her.
>
> On **10/2/97** we were reading *Addy*. A guest was in the room, and I think this affected Renee. She asked, Why do we have so many other people in the room?
>
> On **10/9/97** students could choose how they wanted to express what they read in *Addy*. Renee sat slouching against the wall with a frown. I went through the list of choices and asked if she wanted to do any of the activities. She said no to all except the acting. At this she gave a slight shrug and slight lip-up. She said no one would do it with her because they all had started. I said I would do it with her. Then Lyn said, "I will do it with you."
>
> Other students ended up joining Renee. They used tape for shackles and an umbrella as a whip. When Renee pretended to whip the person who was playing Addy, the umbrella extended and really hit Addy. This brought a feeling of realism to the skit. The students had a blast. They held up the book, read it, and acted out everything that happened in one scene.
>
> On **10/21/97** after reading *Addy*, Renee said she wanted to discuss what she had read, but did not move over to work with Nora and Von right away. I told her she could come discuss with them, and then she moved over.
>
> On **11/5/97** we read the end of the story part of *Addy*. Renee did not like the ending. She did not say why. I said there are more books in the *Meet Addy* series.
>
> For the project after the day's reading, Renee and Hanna worked together and made with play dough the wagon in which Addy and her Mama escaped to freedom.
>
> On **11/20/97** students were to present their final projects on *Meet Addy*. Most students straggled in. Renee had not brought the fixings for the food she was going to prepare for her project, and she had had a hard morning. Renee said too that she was short on money. I was so pleased that she had come in just the same. It meant to me that she felt comfortable in class and knew that she was more important than any food she could bring. She used school funds to buy supplies, and made spinach because, as she said, slaves ate greens.
>
> On **11/25/97** I asked students what they liked about the Addy project. Renee said, "I know all about Addy's book in my head."

On **12/5/97** we were reading a report on the Underground Railroad and Renee said, "I really didn't get into this. This little paragraph I done lost concentration. I got to read this over." I told her to go ahead and do so.

On **12/11/97** we were reading our Sojourner Truth book. Renee interrupted while Viv was reading. "So who did he sell? He bought her for $50 and sold her for $105." This is the first time that Renee had done this. When we finished reading for the day, Renee read on and said, "Wow, they sold her again."

After reading, Lyn wanted to do a skit. Renee got up to do it with her. Renee and Lyn were combing through the reading for information to do one of the "Choose 3" activities. Kim joined them. They discussed how the skit should be acted out. They decided who would take which role and what they would each say. They began to act, and while acting, they discussed what each character should be doing and feeling.

Renee and Lyn were later combing through the reading again for the important dates of Sojourner's life and the prices for which she was sold.

At the end of class, Julie Viens interviewed Renee about what she liked in class.

> *Well, I like the readin'. I like the readin'. How we act all, and then one time we had cooked. You know out the book, we had cooked.... Yeah we cooked some rice, some rice, and well it was supposed to be collard greens, but it was spinach. And we all ate it. We act out the book out of Addy. Addy's book you know when she... you know when Addy's father was sold and all that stuff. I like the reading and Lezlie's class. We're only talking about Lezlie's class. It's the reading, and umm it's helping me. And now I'm startin' to ask questions... I read somein', I have to go back and read it again, so I can understand it. And if I don't understand it, now I'm startin' to ask, 'Does this mean?' or 'What they sayin'?'*
>
> ***Julie:*** *"You said that you had started to ask questions?"*
>
> ***Renee:*** *"Because I had read it and I didn't understand some of it, so I have to read it again, and then I start asking questions about that paragraph to see if I am right. You know?"*
>
> ***Julie:*** *"So you do like a little check on yourself?"*
>
> ***Renee:*** *"See like we do these books up here too. And findin' you know what's right what's goin' on in that sentence. And since I'm doin' a lot of it, I'm gettin' better at it."*

On **12/18/97** while listing the times Sojourner Truth was sold and for how much, Renee jumped in and said, "And then $105." Renee then said, "We did a skit on this. Remember?"

> I think what I call "choice expression" that is based on MI theory allowed Renee to explore reading in an unthreatening way. She used her strongest intelligences to process what she read and as a result, was able to understand and remember more of what she read.

Increased Interest in Reading

Adult students who read at low levels don't spend time reading a lot, and therefore don't get better at reading. Doing projects and having choices of how to express themselves seemed to increase my students' interest in reading. I observed that they thought about the reading when they weren't in class, and they showed interest while in class. Here are some examples.

When we first started the book *Meet Addy*, Viv said, "I hate reading." She would sit in back of the class leaning against the wall hiding behind the book with the apparent hope that I wouldn't call on her (sometimes when I did call on her she would sigh in a resigned way.) On 11/5, after four weeks of doing choice activities, Viv asked to read first.

After we were a ways into the *Addy* book, Nita regularly asked, "Do we gonna read today? [sic]" And when we would finish reading for the day she would ask if we could continue reading.

When a group of students put on a final skit about Addy, Victoria brought candy worms as a prop. She also brought surgical gloves because she had to force these worms into another student's mouth during the skit. Victoria's thoroughness of preparation for her role surprised me. She had obviously thought about every detail of her part.

Divergent Evidence

We had two students in my class and three in Louise's class for whom the multi-sensory approach combined with the application of MI theory did not make a difference. I think they are severely learning disabled. The advances these students can make in their writing and reading are slower than what a study of this length can show.

NEW QUESTIONS

My successes at applying MI Theory to reading and writing compel me to question how I can apply it to all subjects. I also wonder how I can continue to expand students' exploration of their own intelligences.

Five students who seem to have severe learning disabilities and/or profound language deficiencies did not appear to improve in either reading or writing. I would like to see further research on whether the application of MI Theory can assist people with learning in the realm of their disability. I think that someone who needs accommodations (a persons legal right to have a disability accommodated for either at school or on the job) must constantly be relying on all their intelligences to make up for their disability. I would like to learn more about accomodations combined with the application of MI theory. I would like to know how to coordinate the two most effectively.

MI allowed more opportunities to succeed in my classroom beyond just being good at reading and writing. The students at my level are so used to not knowing how to do school work. It seems so important to them to get the right answer right way. They seem to go blank when presented with a problem, or they give up without attempting. This raises a question for me of what MI theory might have to offer for teaching students problem-solving skills.

CONCLUSION

I feel great appreciation at having been able to see sides of my students I had not seen in the past. MI-based activities provided a stage on which students could shine. Students got to share what they remembered in a way they enjoyed. Probably because of this, their projects were richer and included details, nuances and interpretations I had not seen before with students at this level. I enjoyed the slower pace a project or activity based class demanded. We covered more of what the students wanted to learn, and we explored it more in depth.

I enjoyed trying to keep my comments to myself and letting students find their own answers. My class became more interactive and student directed as I experimented with MI theory. Before this research project, I did most of the leading and dictated the order of the activities. In my journal after doing a choice expression activity I wrote, "I think that as a teacher I have always wanted to find the best way to give the class over to the students. It was just that I did not know how; now I know how." (Teacher journal, 10/9/97) I would like to move toward open ended questions and projects posed by the students or myself. I want to further create an atmosphere where the students and I journey to knowledge together.

I was continually moved by the students' depth of understanding, sensitivity to the subject, and interest once they were allowed to choose their form of expression. I wrote after doing the first choice expression project and being awed by its results: "I do not know that I am seeing changes in students abilities. What I am seeing is perhaps other sides of the students that I would not see if we were doing only paper and pencil work." (Teacher journal, 11/13/97)

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